FEEDSTUFFS

★ A WEEKLY NEWSPAPER ★

FOR THE FEED MANUFACTURER, JOBBER, BROKER and DEALER

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2 Features of Farm Bill Cause Concern

Proposals Would Let CCC Sell Stocks At Lower Prices

By JOHN CIPPERLY
Feedstuffs Washington Correspondent

WASHINGTON—Two features of the administration's new farm bill introduced in Congress this week have caused deep concern in grain merchandising and commodity market circles.

One is a provision which would authorize Commodity Credit Corp. to sell its commodity stocks equal in sales value to the cost of redeeming certificates in cash. The certificates would be issued to producers under the acreage reserve part of the soil bank plan.

The other is a section of the bill which would repeal the present statutory re-sale provision of the farm law which calls for CCC sales at the price support level plus 5%, plus reasonable carrying charges. The bill would fix re-sale prices of CCC stocks at the price support level plus carrying charges.

The provision to sell enough CCC stocks to enable redemption of certificates for cash means that CCC would have little price restrictions on such sales of any of the commodities involved—wheat, cotton, corn or rice. The bill expressly says that "CCC is authorized to sell at market prices."

Many persons believe that this is extremely bearish, and that CCC sales would drive down the markets for these commodities. Within Senate

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Cuban Molasses Deal Strengthens U.S. Markets

The purchase by U.S. importers of at least 100 million gallons of blackstrap molasses from Cuba was reported in the molasses trade this week. Confirmation is expected momentarily from the Cuban Sugar Institute. Reported price was 10¢ gal., f.o.b. Cuba, with some advice indicating as high as 10½¢.

The purchases last year were made at 7.8¢ gal., and the increase in the market reflects the heavier use of molasses in the feed industry, particularly for high molasses pellets for cattle feeding.

The purchase may constitute the total amount the U.S. will acquire from Cuba this year. The USDA agricultural marketing service reported this week that purchases by the U.S. in Cuba last year totaled 115.5 million gallons out of a total of 182.4 million gallons exported by Cuba. The U.K. acquired 66.8 million gallons.

News of the Cuban sale tended to strengthen current domestic molasses markets. Early in the week sales as low as 11¼¢ gal. were reported and by mid-week the market had risen to 12¢ gal., New Orleans. It is estimated that increased ocean freight costs bring Cuban molasses into New Orleans at close to 13¢ gal., based upon a 10¢ Cuban purchase.

MOLASSES RATE

WASHINGTON — The Interstate Commerce Commission voted Jan. 20 not to suspend the proposed rail rate reductions on molasses, and the lower rates will become effective Jan. 26. (An earlier story on postponement of the reduction appears on page 4.)

Turkey Producers Plan 6% Increase in Output

WASHINGTON—It has been predicted for some time that the favorable turkey returns in 1955 would bring a substantial increase in production in 1956. Official confirmation of those predictions came this week when the U.S. Department of Agriculture reported that growers now plan to increase turkey numbers this year by 6%.

The number of turkeys actually raised this year may vary somewhat from growers' Jan. 1 intentions, but present indications are that heavy breed output will be up 14% while light breed production will drop 16% under the 1955 total, for an over-all increase of 6% in numbers.

If growers carry out their intentions, the number of turkeys raised in 1956 will be a record high 67 million, compared with 63 million in 1955. Increases are indicated for all parts of the country. (See state and area tables on page 8.)

The predicted increase will come entirely in heavy breed birds, for indications are that production of light breed birds, down in 1955, will show another decrease in 1956.

In this connection, it may be noted that while light breed production is declining, increasing numbers of heavy-type birds are sold at light weights.

Here's the way the situation looks for the different types of birds:

● Heavy breed growers intend to raise 53,452,000 Bronze and other heavy breed turkeys this year—14% more than in 1955. All parts of the country plan increases in heavy breed birds, varying from 7% in the north Atlantic states to 38% in the south Atlantic states.

Higher prices received for 1955 heavy breed turkeys and a more favorable turkey-feed price relationship than a year earlier are the reasons given by growers for the expected increase in heavy breed production.

● Light breed growers plan to raise 13,489,000 Beltsville White and other light breed birds—16% less than in 1955. Decreases are planned in all parts of the country except the south central states, where an increase of 2% is expected. Decreases range from 11% in the west north central region to 25% in the east north central states.

Turkey growers in the West North Central states, an important producing area, plan a 10% increase in heavy breed turkeys, but an 11% decrease in light breed turkeys, giving a 5% increase in all turkeys. Growers in the western states, the largest commercial producing area in the U.S., expect to increase heavy breed

(Continued on page 8)

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Dangers in Turkey Crop Boost Noted

By JOHN CIPPERLY
Feedstuffs Washington Correspondent

WASHINGTON — Turkey producers' intentions for 1956, as revealed in a U.S. Department of Agriculture survey, are causing worry in USDA circles. Feed industry experts in the department sense the danger signals in the indicated over-all expansion of turkey production this year.

The chief danger lies in expansion of heavy breed production, which may be up as much as 14%. However, on the light breed side, growers appear to be backing away, with intentions indicating a reduction of 16% from last year.

On balance, it is indicated that total turkey numbers will be up 6%. That does not disclose the whole story, however. The increase should also be considered in terms of turkey meat poundage.

After examining the intentions report, USDA officials noted the apparent loss of popularity for the lightweight varieties. At one time officials had seen the light breeds as the means whereby the turkey would become more than a holiday item.

Last year the declining trend in terms of production of light breed birds made itself evident, but the continuing production decrease for 1956 seems to mark a failure of this type of turkey to meet producer and market acceptance, officials indicated.

(In this connection, as has been

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1% More Cattle and Calves on Feed Jan. 1 Than Year Ago

WASHINGTON — The number of cattle and calves in the U.S. on feed for market on Jan. 1, 1956, was 1% larger than a year earlier, according to the Crop Reporting Board of the U.S. Department of Agriculture.

The estimated number was 5,823,000 head, compared with 5,786,000 head on Jan. 1, 1955, and the 1950-54 average of 5,001,000 head. The number on feed in the North Central states was about the same as a year ago, while in the 13 western states, the number was up 3%.

The Corn Belt total on Jan. 1 was estimated by USDA at 4,178,000 head. The western Corn Belt states had 4% fewer, while feeding in the eastern Corn Belt was up 9% from a year earlier. Iowa, the leading feeding state, was the same as a year ago.

Decreases in South Dakota, Nebraska and Kansas more than offset increases in all other western Corn Belt states. Illinois, the second ranking feeding state, showed a 5% increase this year. Feeding in each of the other eastern Corn Belt states was also larger than a year earlier.

During the October-December period, shipments of stocker and feeder cattle into the nine Corn Belt states (Ohio, Indiana, Illinois, Minnesota, Iowa, Missouri, South Dakota, Ne-

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Special Alfalfa Section in This Issue

The alfalfa dehydrating industry and the Jan. 25-28 convention of the American Dehydrators Assn. receive detailed attention in this issue of Feedstuffs. A special section will be found on the pages following page 42. Contents include:

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A Pleasant Custom

MANY readers of Feedstuffs—those who have been with us for quite a spell—are familiar with our pleasant custom of paying special attention to the alfalfa dehydrating industry each year. This is done at the time the American Dehydrators Assn. is convening for its annual get-together. The 1956 meeting is Jan. 26-28 at Coronado, Cal.

This issue of Feedstuffs, consequently, contains a section devoted to dehydrated alfalfa meal. As usual, it presents a great deal of information about the alfalfa meal industry. The theme of this year's meeting is sales, service and the future. Our effort also reviews some of the other aspects of the alfalfa picture—growing and harvesting, the processing, storage and distribution and the utilization of the product in formula feeds.

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THE big topics in the dehydrated alfalfa business during the past year—aside from sales and prices, of course—have been inert gas storage, pelleting, and the use of grease or oil for dust control. These are designed to make the product more uniform and easier to ship and handle. They have called for greater capital outlays and have resulted in a year of consolidation. It has not been a good year, profitwise, for many of the dehydrators, but it has been another year of progress, nevertheless, from the standpoint of establishing the industry as a whole in a stronger competitive position.

The alfalfa dehydrating industry is as good an example as we know of the value of an association and of continuing research. The need for a research program was recognized by the association shortly after it was formed. The Alfalfa Research Council was organized and was followed a few years later by a funded research program. The purpose is to explore the production and processing of alfalfa and the use of alfalfa products. The expressed objective was to secure benefits for the common good of the feed industry, feeders and the dehydrating industry.

Cooperation of the experiment stations and the colleges with the dehydrators has been outstanding. We can think of no other feed ingredient that has attracted such wide and whole-hearted support. The result has been a constant flow of knowledge. The feed industry and feeders have been made cognizant of the values in dehydrated alfalfa meal. One of the great benefits of the research has been that, as one use of alfalfa meal diminishes, other uses are discovered and developed.

Another accomplishment of great value which can be credited to the American Dehydrators Assn. was the writing and adoption of a set of trade rules and a code of ethics. This occurred in 1948, when a new constitution and by-laws also were adopted. This did much to place the industry on a high ethical plane and to clarify trading practices. The move was an important one in furthering the confidence with which feed manufacturers could buy alfalfa meal.

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IF anyone will look back to all of the things that have happened in the feed industry since 1941, when the ADA was organized, he certainly will see that many of the problems facing the alfalfa processors could have been disastrous to companies or even to the industry. Many obstacles would have been difficult to meet. The result would have been a much lesser use of alfalfa meal and, as far as the formula feed manufacturer and user is concerned, a considerably higher cost for some of the ration's ingredients.

It can be said that a strong, well backed association, high trade ethics and continuing research have been the principal factors responsible for the development of the alfalfa dehydrating industry into the valuable industrial unit it is. It could not have reached its present state, or its product could not have had its present acceptance, if each dehydrator had traveled an independent road.

As we have said several times before, almost all of the dehydrated alfalfa meal produced is used in formula feed, and the interests of the two industries are largely identical. As the dehydrators make progress in improving their product and in finding new values for it, feed manufacturers benefit, too. As the formula feed industry expands, the dehydrators also prosper.

So, it is a fine thing for everyone concerned to note the very real and continuing progress that is being made, the sincerity and persistence with which problems are attacked, and the strength to which the American Dehydrators Assn. has grown.

A FEEDSTUFFS FORMULA FEEDS: HOW'S BUSINESS? FEATURE

Formula feed sales showed little or no over-all improvement in most areas this week, but some feed men were looking forward to gains before too long. In the meantime, the pace held fairly steady. A slump in broiler prices was noted in some sections, but generally poultry feed demand was good and further improvement was foreseen. Hog feed business continued slow, and cattle feed volume lagged or was only fair. Dairy feed business was fair to good in some areas. Ingredient prices did not show any great changes, and formula feed price lists had little change. The index of wholesale feedstuffs prices declined .4 point to 188.7 in the week ended Jan. 18, and the feed grain index dipped 3.7 points to 182.5. (Ingredient details on pages 70-72.)

Northwest

Formula feed business showed little change in the Northwest this week. For the most part, demand was not particularly strong, but business held up fairly well, manufacturers indicated.

Hog feed business, hurt by the low hog prices, continued slow, but dairy feed sales were fair to good. Cattle feed business also was fair.

Sales of laying feeds were said to be fair to good or about average for this time of the year. An early start in farmers' purchases of baby chicks was indicated in reports of some sales of chick starters.

While current formula feed demand is not very strong and may not pick up appreciably immediately, feed men are noting reports on poultry intentions and are looking for a gain in volume later.

In the meantime, dealers have no incentive to stock up, with demand not very heavy and prices tending to be easy recently.

Feed plant operations this week were at about the same rate as in the previous week. However, backlogs in some cases were reported fairly good. Feed ingredient prices did not show too much change this week. Prices of a number of commodities were somewhat easier, while millfeed was stronger. Formula feed prices were expected to show little change.

Southwest

Little improvement in business was reported by feed mills in the Southwest this week. Actually, sales probably were under a week ago, according to shipping volume and reports on running time. Carlot shipments were reduced and operations held to a five-day week, with no overtime reported.

A fly in the ointment was the slump in broiler prices in the Arkansas broiler area. After making a good comeback to the 22-23¢ level following the holidays, broilers fell back sharply to 17-18¢ lb. Fairly adequate supplies of finished broilers plus cheap competition of other meats on the market led to the reversal in broiler prices.

At the same time there continued to be a shortage of commercial chicks, indicating no faltering in the interest of growers to continue operations. Most expect broiler prices to be lower this season, and feed sales should not be affected by the situation to any great extent. Most mills actually indicate poultry feeds to be in good demand, with the slack in operations created by sluggish interest in hog and cattle feeds.

Operations were limited to a bare five days this week and prices were unchanged on most items.

Central States

Actual bookings of feed in the central states held at or near unchanged levels during the week ending Jan. 18, but the tone of business seemed to be firming and a spirit of moderate optimism appeared to be generating.

The foundation is laid for a good upturn in feed business, some observers believe. It is thought that inventories all along the supply pipeline are low. Prices, too, have been on the downturn and now are at comparatively low levels. A turn in the weather to normal wintry style, coupled with a stiff price increase, could cause heavier buying all along the line, it is thought.

In the meantime, manufacturers are going along at a steady pace. Some have a curtailed operating schedule with reduced crews, and backlogs are not large. Chick starter demand seems to be developing earlier this year, and broiler feeds are moving at a good clip.

Ohio Valley

Despite continuing favorable weather conditions, sales of formula feeds eased off somewhat this week in the Ohio Valley, thus disappointing manufacturers who had been encouraged by the improving situation earlier in the month, and had anticipated a steady business improvement.

It was believed, however, that the sales setback is only temporary, because the valley area was blanketed this week with several inches of snow, with the mercury holding steady in the 20's. This means continued indoor feeding that will make it necessary for farmers again to resume buying formula feeds before too long.

No one could account for the business downtrend this week, in view of the reported considerable increases in chick flocks, and the widespread belief that the valley industrial situation will continue favorable for heavy sales of all kinds of meats during the first half of this year, at least.

Formula feed prices remained steady this week, but there was some easing off in mill production schedules to prevent a too large accumulation of warehouse stocks. In other words, manufacturers are watching market trends closely, and keeping operations sufficiently flexible to meet whatever situation that may arise.

Southeast

The feed situation in the Southeast has been unchanged to maybe slightly better this week. The cold weather which moved in last week hung on till early this week and has probably helped demand for feeds a little. Reports from as far south as southern Florida say that grass has definitely been killed, and dry lot feeding is almost sure to increase in the hard hit sections. On the other hand, cattle feeders and the like are tending to reduce operations because of feed price ratios being so poor.

Feed ingredients are plentiful, and the southeastern farmer is selling his products at current market prices. Therefore, the slight pickup in demand has not been reflected in any real price advances. Local corn is not as freely offered as it has been, but nobody seems to be hunting for supplies.

The north Georgia broiler situation is about the same with prices still relatively low to the producer. Chick placements remain high and feeding

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172 Counties in 10 States Eligible for Emergency Feed

WASHINGTON—The most recent designation of two Utah counties as drouth disaster areas by the U.S. Department of Agriculture brings to 172 the total number of counties in 10 states where eligible ranchers and stockmen may participate in the emergency feed grain program.

Also during the past week, six counties in California, 39 Texas counties and part of one Colorado county have been designated by USDA as disaster areas.

The two new Utah drouth disaster counties are Rich and Daggett. The area south of U.S. Highway 34 in Yuma County, Colorado, has been designated as a drouth area as have the following 39 counties in Texas:

Bastrop, Brazos, Brown, Burnet, Caldwell, Callahan, Coleman, Comanche, Crane, Crockett, Dallam, Deaf Smith, Eastland, Erath, Hartley, Kimble, Kinney, McCulloch, Menard, Midland, Mills, Mitchell, Moore, Nolan, Oldham, Palo Pinto, Pecos, Potter, Randall, Runnels, San Saba, Scurry, Shackelford, Sherman, Stephens, Sutton, Terrell, Throckmorton and Travis.

Counties in California designated as disaster areas because of floods are Butte, Del Norte, Tulare, Humboldt, Sutter and Yuba.

The list of eligible counties now includes the following numbers: California, 6; Colorado, 5; Connecticut, 8; Kansas, 42; Nevada, 13; North Carolina, 10; Oregon, 2; Texas, 73; Utah, 6, and Wyoming 7.

Under provisions of the emergency feed grain program, eligible farmers and ranchers may obtain certain feed grains and mixed feeds at a reduction in price of $1 cwt. of grain. The program is designed to help stockmen in drouth, flood or hurricane stricken areas maintain basic livestock herds.

Under the current emergency feed program, 55,794 farmer purchase orders were issued for 3,721,242 cwt. of approved grains or mixed feed as of Jan. 12, USDA announced.

Feed Shortage Severe In Pacific Northwest

SPOKANE — Central Washington and northern Idaho livestock men report that they face a critical winter feed shortage and federal aid has been asked for some counties by the Washington director of agriculture, Sverre N. Omdahl.

Mr. Omdahl has asked for federal emergency aid for four Washington counties, Douglas, Okanogan, Ferry and Chelan. The Grant County Cattlemen's Assn. has asked that its county be included also.

George Cook, county agent of Idaho County, Idaho, where much of the grazing land is in the higher elevations of the fifth largest county in the U.S., said cattlemen were running into trouble there, too. Pacific Northwest cattlemen were forced to bring their cattle off range as much as seven weeks earlier than normal.

Unusually early snows followed by prolonged freezing weather caused the difficulties, the cattlemen said.

"It's probably the most desperate situation we've got," Mr. Omdahl said.

While probing the feed crisis, Mr. Omdahl warned that the state's agriculture industry in general is headed "for the worst weather in memory. The north central section has had the most snow and worst winter ever experienced."

State Sen. George Zahn, a spokesman for the Okanogan cattlemen, said stockmen had used up about a third of their feed supplies before the season normally would have begun.

Controller Named

KANSAS CITY—J. H. Sund has recently been appointed controller of the Douglas Chemical Co., manufacturer of insecticides, grain fumigants and grain protectants.

Mr. Sund is a graduate of the University of Kansas and has had experience in management and sales training in the photographic industry, electric component manufacturing and housewares manufacturing. He formerly was with Bonsun, Inc., Kansas City.

Conference Expected to Aid in Meeting Problems Involved With Medicated Feed

By GEORGE L. GATES
Feedstuffs Editorial Staff

WASHINGTON — Widespread interest among feed manufacturers, drug suppliers and government officials is indicated in the symposium on medicated feeds being held here Jan. 23-24.

Attendance is expected to reach 500 or more, according to Dr. Charles G. Durbin, associate veterinary medical director of the Food and Drug Administration, chairman for the symposium.

The keen interest shown by all segments of the trade involved in this phase of feed manufacturing is gratifying to the FDA officials.

This first major attempt at mass examination of the problems involved in producing medicated feeds is expected to lead to a generally broader understanding of the most effective—and safest—ways to use growth-stimulating and disease-attacking drugs.

Thus, Dr. Durbin says, it is likely that problems involved in regulating the manufacture and distribution of such feeds can be considerably reduced.

"Every Feed Man a Druggist"

"Today every feed manufacturer and dealer is a druggist," the FDA official commented, "and the more aware each becomes of this fact, the more certain we are of achieving proper use of medicated feeds."

Difficulties in enforcing federal regulations governing such feeds have not been excessive, it was indicated, but the educational attempt through this "short course" was considered wise at this time to focus attention on inherent problems and develop greater cooperation among all concerned. Dr. Durbin said that in the past several months inquiries from industry concerning labeling requirements, testing procedures and other matters had increased greatly. This parallels the upsurge in use of these feed additives.

The program, in broad outline, is covering this ground: Description of the purpose of the symposium and history of medicated feeds; types of medicated feeds; pharmacological aspects; assay problems in manufacture of medicated feeds; public health significance of drugs used to medicate animals by way of feeds; state regulations to which medicated feeds are subject; the relationship of the Food and Drug Administration to medicated feeds; the future of medicated feeds.

The discussion of FDA interest in medicated feeds will be broken down into these components: New-drug status of medicated feeds; products subject to certification when added to feeds, and warning labeling that should appear on medicated feeds.

A panel discussion at the close of the conference is expected to pinpoint some of the more pressing problems.

29 Speakers on Program

A total of 29 speakers will be heard during the two-day conference, with

(Continued on page 6)

Northwest Feed Group Hears Speakers on Credit, Nutrition

By EMMET HOFFMAN and THOMAS LETCH
Feedstuffs Editorial Staff

MINNEAPOLIS — Credit is being used in the feed industry as a sales tool in many instances. This is unfortunate, both for the dealer and the manufacturer, and has put them both in a bad way, charged James H. Burrell, James H. Burrell & Sons, Inc., St. Louis, in a talk at the Northwest Retail Feed Association's 24th annual conference.

"If you have overdue accounts go out to the feeder and ask him for the money due you. You will be surprised. Many will write out a check right there," Mr. Burrell said. He said many farmers expect to be asked for the money they owe and will not be offended if the feed dealer does so.

In his talk, titled, "Merchandising and Selling Feeds Today," Mr. Burrell said that "the best feed in the world can't be sold by untrained and incompetent salesmen." He urged dealers and manufacturers to train their salesmen well for "people are the greatest assets you have." A well trained salesman knows what his products are, what they're for, what they'll do and how to use them properly. A good feed salesman asks the farmers, "How are your chicks? How are your hogs coming along? How many chicks are you going to raise? May I look at your dairy herd? May I look at your flock?" A good feed salesman lets the farmer tell about his problems and his progress, he stated.

The Northwest association held its meeting Jan. 16-17 at the Nicollet Hotel, Minneapolis, with 400 members and guests in attendance.

In addition to a number of trade problems discussed, a panel composed of feed nutrition authorities summarized, "What's New in Animal and Poultry Nutrition and Management" on the morning of Jan. 17.

OFFICERS ELECTED — The two top officers in the Northwest Retail Feed Assn. were reelected as were two directors. R. M. Serkland, Grain Products Co., St. James, Minn., was reelected president, and Wendell H. Lenton, Farmers Elevator Co., Inc., Stewartville, Minn., was reelected vice president. A. L. Larson, Madison (Minn.) Milling Co., and Harold Thomforde, Crookston (Minn.) Milling Co., were reelected directors.

John Manahan, John Manahan Co., Chatfield, Minn., was elected a new director, and Roland Gessner, Land O' Lakes Creameries, Inc., Valley City, N.D., was elected chairman of the North Dakota division of the association, thus becoming an ex officio member of the board of directors.

Other members of the board are Lloyd Tobias, Pipestone (Minn.) Grain Co.; F. T. Heffelfinger II, King Midas Feed Mills, Minneapolis; Willard Houle, E. J. Houle Co., Forest Lake, Minn.; Stanley Speltz, Speltz Grain & Coal Co., Albert Lea, Minn.; George Kolb, Jr., Belgrade (Minn.) Flour Mills, and Joseph Welder, Farmers Elevator Co., Blue Earth, Minn.

W. D. Flemming, Grain & Feed Review, Minneapolis, was re-appointed secretary-treasurer at a board meeting following the election. At the meeting Mr. Serkland announced that a special program would be planned for next year's convention to celebrate the 25th year of the association.

Two panel discussions opened the Jan. 16 sessions. They were on "Bulk Handling: How to Convert to Bulk," moderated by Lloyd Tobias, Pipestone (Minn.) Grain Co., and "When Production Drops and It Isn't the Feed—Then What?," moderated by Mr. Serkland.

BULK HANDLING — The E. J. Houle Co., Forest Lake, Minn., is presently expanding its bulk storage facilities, explained Willard Houle of that firm. During the peak season there is often a pinch on bulk storage facilities at the plant and this is being alleviated, Mr. Houle said. The Houle company has no bulk hauling facilities but the bulk buyers have either a truck or trailer and do their own hauling.

Mr. Houle traced his company's experience with bulk handling of feed, stating that a survey of the trade was made and a meeting with prospective bulk feeders was held prior to installation of bulk handling equipment. It was on the basis of the survey and meeting that the decision to go into bulk handling came about, Mr. Houle said.

U. E. Fitzpatrick, U. E. Fitzpatrick & Co., Warsaw, Ind., estimated that a feeder should have at least the following livestock and poultry numbers in order to efficiently use bulk handling methods: 1,000 laying hens, 100 hogs, 500 turkeys, 2,500 broilers and 25 dairy cows. If a dealer is interested in knowing whether bulk handling would pay off in his area he should make a survey in his trade to find out what the potential market is, Mr. Fitzpatrick added.

Most feed mills in Minnesota can be adapted for bulk handling, said M. J. Benson, M. J. Benson & Co., Hopkins, Minn. Generally, the bulk receiving tank over the scale is a necessity in each situation but individual problems have to be worked out for each feed mill, Mr. Benson added.

FEEDERS' PROBLEMS — "Every complaint from a feeder is an opportunity," stated Norman Dewes, General Mills, Inc., Minneapolis, in his portion of the panel discussion on customers' problems. He voiced what he regarded as a simple, logical method of handling a complaint. He suggested taking the time to talk over the problem thoroughly with the customer and examine every possible cause of trouble. The feeder

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A. V. Jay

IN NEW POST—A. V. Jay has been named manager of special accounts in the agricultural department at the Nopco Chemical Co., Harrison, N.J. The announcement was made by Harold A. Swanson, vice president of Nopco in charge of its vitamin division. In his new position, Mr. Jay will be responsible for sales of Nopco feed supplement products to a selected list of accounts in this country and abroad. He will also direct the sale of Lipamone, an estrogenic hormone for poultry. Mr. Jay formerly served as eastern sales manager of the agricultural department. He has been associated with Nopco since 1927.

S.D. Feed Group Votes to Disband

HURON, S.D. — Members of the South Dakota Feed Manufacturers Assn. have voted to dissolve their organization and to affiliate as individual firms with the Farmers Elevator Assn. of South Dakota.

Their action was taken at a meeting in Huron. They expressed the feeling that the feed industry could best be served by some organization that would include all segments of the feed trade, from manufacturing to the retail level.

The board of directors of the Farmers Elevator Assn. has voted to establish an active Feed Advisory Council as a part of its permanent service program. Feed control officials in the state have been notified that the Farmers Elevator Assn. will be the medium through which they can work with the entire feed industry.

USDA Buys More Canned Pork Products

WASHINGTON — Purchases last week under the continuing program to help expand domestic consumption of pork and assist hog producers reached a record quantity of 10,060,050 lb. of canned pork products, USDA reported.

The latest purchases were for 5,824,650 lb. of canned pork and gravy at prices ranging from 64.48 to 64.50¢ lb.; 2,435,400 lb. of pork luncheon meat at prices ranging from 41.90 to 42.30¢ lb., and 1,800,000 lb. of canned ham at prices ranging from 59 to 61.50¢ lb.

Poultry Production Topics Announced For Atlanta Meeting

ATLANTA—Several talks relating to nutrition and other aspects of poultry production of interest to feed men will be given at the annual meeting of the Association of Southern Agricultural Workers at Atlanta Feb. 6-8. The poultry section program will be at the Biltmore Hotel, Atlanta.

The Feb. 6 morning topics and speakers will include: "Ten Guides for Making Money from Broilers," by Arthur Gannon, University of Georgia; "The Effects of Continuous Feeding of Sulfamethazine on Single Comb White Leghorn Chicks," L. J. Dreesen and Air van Tienhoven, Mississippi State College; "Studies on Respiratory Bacteriological Flora in C. R. D.," K. E. Price, Z. Zolli, W. B. Hardie and M. J. Gallion, Chas. Pfizer & Co., Inc.; "Reconditioning Old Hens," Fred Moultrie, Alabama Polytechnic Institute; "Does Restricted Feeding Pay?," B. J. McSpadden, University of Tennessee, and "The Effect of Marble and Granite Grit as Free Choice Supplements to Broiler Rations," Edward C. Naber and Charles L. Morgan, Clemson Agricultural College.

The afternoon program on Feb. 6 will include: "Factors Affecting Feed Efficiency for Egg Production," J. H. Quisenberry, Texas A&M College; "A Comparison of Breed Differences in Cages and on the Floor," T. M. Huston and Charles K. Laurent, University of Georgia; "The Economics of Unidentified Growth Factor Supplementation for Poultry," J. H. Hare, W. M. Reynolds, W. K. Warden and H. G. Luther, Chas. Pfizer & Co., Inc.; "Protein Requirements Under Various Laying Conditions," George Ingram, Alabama Polytechnic Institute; "Use of Poultry By-Products in Broiler Rations," H. L. Fuller, University of Georgia; and "Influence of Environment on Production," H. V. Shirley, University of Tennessee.

The morning program Feb. 7 will include a panel discussion on "Financing Broiler Production." Moderator will be Thomas J. Harrold, Harrold's Hatchery, Winterville, Ga., with members to include Julius F. Bishop, Colonial Feed Co., Athens, Ga.; Willard Strain, Strain Feed & Coal Co., Dalton, Ga.; Hollis Shomo, Virginia Department of Agriculture, and Gratton Lindsey, Lindsey-Robinson & Co., Roanoke, Va.

Other Feb. 7 morning topics and speakers will include: "The Study of Energy in a Practical Broiler Ration," C. E. Richardson and A. B. Watts; "Antibiotics for Laying Hens," J. R. Couch, Texas A&M College, and "Broiler Studies Under Commercial Conditions," B. H. Davis, Louisiana State University.

Feb. 7 afternoon topics and speakers will be: "Status of the Poultry Industry in the Southeast," Dale F. King, Alabama Polytechnic Institute; and on the morning program Feb. 8 will be T. M. Ferguson, B. L. Reid and Dr. Couch of Texas A&M College who will discuss, "The Present Status of Energy-Protein-Methionine in Turkey Starter Diets."

USDA TO SELL NO MORE GOOD QUALITY CORN

WASHINGTON—USDA has decided to withhold from sale all of its good quality corn from bin sites for all purposes, except for unfilled and small additional demands to meet barter sales. This ban includes sales for export as well as domestic uses. It will be in effect through April 1, 1956. However, USDA will continue to offer off grade corn at bin sites, but it is not expected that this volume will be large. Such sales of No. 3 yellow corn as must be made to fulfill barter contract calls on CCC will be carefully screened at country points and USDA officials here doubt that any corn failing to meet export grade will move into terminal markets. This formal announcement means that USDA has determined to block the leak of CCC stocks of corn into the major markets.

Molasses Freight Rate Reduction Postponed

WASHINGTON — A scheduled reduction in railroad molasses freight rates in the Midwest was postponed Jan. 16 in order that the Interstate Commerce Commission might consider last-minute opposition to the change. Over 200 petitions for suspension of the new tariffs were received by the ICC, it was reported. Most of the petitions came from barge lines, certain molasses shippers and their customers.

Because of the short time to consider the situation, the railroads voluntarily agreed to postpone the rate reduction until Jan. 26. It is believed that by early next week the ICC will have made a decision on the case.

W. L. Hall Sells Interest In Dr. LeGear Company

ST. LOUIS — Announcement has been made that effective Jan. 1 W. L. Hall has sold his entire interest in the Dr. L. D. LeGear Medicine Co., St. Louis.

Mr. Hall, who was vice president and sales manager, is no longer connected with the St. Louis company. Mr. Hall stated that he is deferring a decision regarding his future plans pending his return to St. Louis after a two-month vacation through the South.

Winter Range in West Still Poor to Fair; Stock in Good Shape

FARGO, N.D.—The supply of winter range and pasture feed in the 17 western range states continues poor to mostly fair, with dry conditions in the central and southern Great Plains and the Southwest. These facts are contained in the range and livestock report as of Jan. 1, 1956, released by the office of the agricultural statistician, U.S. Department of Agriculture, Fargo. The report is based on returns from stockmen.

December rains and snows covered ranges in the northern plains and supplied moisture west of the Rockies. Jan. 1 range and pasture feed condition at 71% is slightly better than the 69% of a year ago, which compares with 72% two years ago and 71% three years ago. The West has had four years of below average range feed conditions, the report states.

Mild, open weather during December was favorable for grazing and short feed supplies in the central and southern plains and Southwest, but much of the northern plains and Northwest had snow cover and heavy feeding.

Livestock generally continue in good condition, with considerable feeding in the dry and snow covered sections, according to the Jan. 1 report of the Denver Livestock Office of USDA.

Cattle and calves are generally wintering in good condition and have been maintained in the dry and snow covered areas by supplemental feeding. Cattle in some of the northern snow covered areas of the central and southern plains have held up well. Marketings of cattle and calves from the Southwest for November and December were smaller than a year earlier, with a fairly large movement from the intermountain section, USDA reports.

Sheep have generally been held in good condition with about the usual shrink in the northern and western sections. Sheep are wintering well in Montana, Wyoming, Idaho, Colorado, Utah and Nevada. Mild, open weather opened some winter ranges in Wyoming, Utah and western Colorado. Sheep are in good to very good condition in New Mexico. Texas sheep have done well with feeding, as grazing is short. Early lambs are making good development in Texas and Arizona, with California early lambs expected to do well with favorable feed following the excessive rains, the report states.

CCC Rough Rice Sold for Grinding

DALLAS — Sale of 27,010 cwt. rough rice was reported this week by Dallas Commodity Stabilization Service. It is to be ground within 90 days for feed if used domestically or for feed or industrial use if exported.

Prices at which the rice sold ranged from $1.15 to $1.55 cwt.

Kansas City Feed Club Changes Meeting Time

KANSAS CITY—A change in the time for the January meeting of the Kansas City Feed Club has been announced by President Robert Hollister, Cereal Byproducts Co. Due to a state election Jan. 24 the meeting at Millimans restaurant will begin at 7 p.m. instead of 6 p.m., previously announced.

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"Trends" Theme of Midwest Feed Group's Convention

KANSAS CITY — Trends are the theme of the 12th annual Midwest Feed Manufacturers Assn. convention which will be held at the Hotel Muehlebach here Feb. 26-28. Specifically, the meeting will cover trends in agriculture and in the formula feed business.

"Realizing that we are living in an era of changes which molds new trends, the program committee has obtained a roster of speakers capable of translating these trends in all phases of our industry," Oscar Straube, president of Pay Way Feed Mills, Inc., Kansas City, chairman of the program committee, said.

Mr. Straube's discussion, "Challenge to Change," will keynote the program to follow. Among the speakers and the various trends which they will point out and forecast are:

Agriculture—Rex Bailey, president of Doane Agricultural Service, St. Louis.

Beef and livestock—Jerry Sotola, Armour's Livestock Bureau, Chicago.

Poultry—Don Turnbull, executive secretary, American Poultry & Hatchery Federation.

Research and technology—Dr. Charles Kimball, president, Midwest Research Institute, Kansas City.

Nutrition — Dr. J. Russell Couch, department of poultry husbandry, Texas A&M College, College Station.

Feed control—John Monaghan, director, Kansas feed control, Topeka.

Medicated feeds—Dr. Ernest Bechtel, director of research, General Mills, Inc., Indianola, Iowa.

Selling — Ralph Everett, Empire Sales Training, Inc., Buffalo.

Cooperation — Dr. A. E. Darlow, dean of the school of agriculture, Oklahoma A&M College, Stillwater.

Advertising and merchandising—Frank Kouba, vice president, Klau-Van Pietersom-Dunlap, Inc., Milwaukee.

Personnel — Dr. Arthur Brayfield, Kansas State College, Manhattan.

Summing up the trends as cited by the speakers on the program will be John K. Westberg, International Minerals & Chemical Corp., Chicago.

Of special interest is the exhibits portion of the program. For the first time in the history of the Midwest, the association is sponsoring displays by the allied trades.

Protein Meals Firm In Memphis Trading

MEMPHIS—Protein oil meals at Memphis this week showed a firm undertone. Prices were mixed and trading activity was reduced somewhat from the previous week.

During the week, oil meal prices were buoyed by soybean strength.

Trade buying in the nearby oil meal positions was in evidence, while fairly persistent selling in deferred old crop months made its appearance.

Dealers said the demand for cash meal at the current levels is broad, witnessed by the Census Bureau report on consumption and stocks on hand. While production of soybean oil meal has been heavier than a year ago at this time, stocks are lower.

Unrestricted soybean oil meal closings ranged from 20¢ a ton lower to 85¢ a ton higher. Volume was slightly lower than the previous week, with 29,900 tons being sold as against 30,000 tons a week ago.

Final Eastern Trunk Line soybean oil meal prices were 60¢ a ton lower to $1 a ton higher. Distant positions posted the gains. There were only 500 tons sold. A week earlier sales amounted to 4,900 tons.

Cottonseed oil meal closed 55¢ a ton lower to $1 a ton higher. October and December made the gains. There were 7,700 tons of cottonseed oil meal sold, compared with 6,200 tons the week before.

MEDICATED FEEDS

(Continued from page 3)

speaking time set to the minute in order to pack in all the pertinent information available.

These speakers have been added to the program since it originally was announced in early December (Feedstuffs, Dec. 10): Jack M. Curtis, Food and Drug Administration; Ernest J. Umberger, FDA; Dr. C. K. Whitehair, Oklahoma A&M College; Franklin O. Gossett, Eli Lilly & Co., Indianapolis; Dr. R. C. Klussendorf, Commercial Solvents Corp., Terre Haute, Ind.

The discussions get under way at 9:30 a.m. Jan. 23 in the auditorium of the Department of Health, Education and Welfare. Participants will be welcomed by George P. Larrick, commissioner of food and drugs, and Bradshaw Mintener, assistant secretary of the Department of Health, Education and Welfare.

R. M. Hersey

VICE PRESIDENT—R. M. Hersey has been elected a vice president of Bemis Bro. Bag Co., it has been announced by F. G. Bemis, president. Mr. Hersey, who is a director and sales director for national accounts, has his headquarters in Minneapolis. He has been with Bemis since 1914. He was made manager of the Minneapolis general sales division in 1940, and was appointed assistant director of sales for interdivisional accounts in 1951. He has been a director since 1953.

Elevator Group Holds Yearly Get-Together

MINNEAPOLIS — More than 250 grain men and their guests attended the 26th annual market get-together dinner at Hotel Radisson Jan. 10, which was held in conjunction with the annual meetings of the Northwest Country Elevator Assn. and the Minneapolis Terminal Elevator Assn.

Ron Kennedy, formerly executive vice president of the Minneapolis Grain Exchange and at one time secretary of the two elevator organizations, returned for the meeting to discuss the work of the American Heritage Foundation, of which he is now executive director. One of the principal aims of the organization is to persuade more people to take an active part in government.

H. O. Frank, Rugby Milling Co., Minneapolis, was reelected president of the Northwest Country Elevator Assn. Other officers reelected are George H. McCabe, the McCabe Co., vice president; Robert G. Cargill, Victoria Elevator Co., treasurer, and Louis C. Webster, secretary.

P. E. Paquette, Osborne-McMillan Elevator Co., was named president of the Minneapolis Terminal Elevator Assn., and Donald Fraser, Cereal Grading Co., was named vice president. Mr. Webster was named secretary-treasurer of this association.

Jan. 28 Wedding

KANSAS CITY — Paul Ullmann, manager of the Kansas City plant of the Chase Bag Co., and Miss Margaret E. Fisher, who has been secretary to Lloyd Riford, chairman of the Beacon Milling Co., Cayuga, N.Y., will be married Jan. 28 at Skaneateles, N.Y. The couple plans a trip to Florida and the Gulf Coast after the wedding.

PARENTS OF TWINS

KANSAS CITY — Twin daughters were born Jan. 10 to Mrs. Joseph A Cooper, wife of the purchasing agent, Staley Milling Co., Kansas City. The Coopers have two other daughters and a son.

IMC Phosphate Plant Capacity To Be Doubled

BARTOW, FLA.—A multi-million dollar expansion program, expected to double the production capacity of its Bonnie plant near here has been announced by Louis Ware, president of International Minerals and Chemical Corporation. The Bonnie plant is the major unit of the corporation's Phosphate Chemicals Division and manufactures triple superphosphate and feed grade dicalcium phosphate.

International has appropriated four million dollars for the first step in this program which is to include a second sulfuric acid plant and new equipment for the neutralization and recovery of plant effluents. When this expansion is completed, the Bonnie plant will be able to produce 500,000 tons of product annually, Mr. Ware said.

Mr. Ware further stated, "This program indicates our full confidence in the Bonnie plant and the future for its products. Recent process developments and improvements have exceeded our expectations. The success of the new process for making dicalcium phosphate, as well as the peak operation at Bonnie during recent months, have combined to give very favorable costs of production and justify this further expansion.

"Dicalcium phosphate is an essential ingredient in animal and poultry feeds and our uniformly granular product, marketed as Dynafos, is particularly well-suited to the automatic mixing operations of the large feed manufacturers. Market demand for this product has exceeded present production capacity. On triple superphosphate, used largely in the manufacture of high-analysis plant foods, we have raised our sales projections for the coming fiscal year."

In commenting on other phases of the operation, Mr. Ware also said that substantial sums are to be spent for the neutralization and recovery of plant wastes.

"In terms of actual operation expense, International is spending close to $1 million in Florida every year on waste disposal measures and this does not include the amounts spent for research nor for the costly pieces of equipment involved," Mr. Ware said. Some $800,000 worth of such equipment is already installed at Bonnie, he pointed out.

"We expect these recovered wastes will be converted into useful by-products and additional investments are contemplated to accomplish this in the near future, particularly in the field of fluorine chemicals," Mr. Ware stated.

D. E. White Continues As President of St. Joseph Exchange

ST. JOSEPH, MO. — D. E. White, Quaker Oats Co., St. Joseph, has been re-elected president of the St. Joseph Grain Exchange. Arthur E. Frank continues as vice president. Mr. Frank is a member of the grain department of Dannen Mills, Inc.

A close fight for election to the board of directors forced the holding of the ballot on two successive days, the first vote having resulted in a tie.

Chosen directors were Christopher Harris, Stratton-Theis Grain Co., R. G. Graham, Graham Grain Co., E. M. Loutch, St. Joseph Grain Co., J. D. McKee, McKee Grain Co., and Mr. White.

Continuing through 1956 from the 1955 term are Fred Nuzum, Bartlett & Co., K. B. Clark, Ken Clark Grain Co., F. A. Wilkins, Geiger Grain Co., and Mr. Frank.

N. K. Thomas continues as secretary after marking up 37 years of service with the exchange.

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Hog Raising Problems, Trends to Be Covered At Iowa State Event

AMES, IOWA—With the present economic situation in the hog business focusing attention on problems and trends in swine raising, the program planned for the 1956 Iowa Swine Processors Day is expected to attract a large crowd.

The event will be held Feb. 20 at the Memorial Union Building at Iowa State College, beginning at 9 a.m.

Experts from the college and industry and agriculture will cover various aspects of the past, present and future of the hog business, including economic factors, breeding, feeding management and merchandising.

The program details reported by Dr. Damon Catron of Iowa State indicate that feed men as well as farmers will benefit from hearing the talks on trends which affect their business.

Prof. Francis Kutish, Iowa State agricultural economist, will discuss economic factors affecting hog raisers. Bernard Ebbing of the Rath Packing Co. will talk on pig-to-packer-to-purchaser aspects, and a representative of the American Meat Institute will discuss pork merchandising.

Dr. Ralph Durham of the Iowa State animal husbandry department will report on boar-testing stations and the necessity of taking the guessing out of boar buying. He will be followed by Dr. L. N. Hazel of the animal husbandry department, who will cover breeding meat-on and fat-off pigs.

Dr. Catron, professor of animal husbandry, will cover life cycle and feeding management of swine based on what he feels the future hog producer will have to follow for profits.

A broiler producer also will be on the program; he will tell how efficient broiler production has become, with a warning that hog raising will have to become efficient also. Prof. Herbert Howell of the Iowa State agricultural economics department will discuss "Your Income-Cost Squeeze," emphasizing the importance of keeping records and knowing costs and different phases of the hog business. Wilbur Plager of the Iowa Swine Producers Assn. will present "Ten New Year's Resolutions for the Hog Man."

The program will wind up with a talk by Dr. Robert Spitzer, Murphy Products Co., Burlington, Wis., entitled "Stop, Look and Listen—Opportunity Ahead." His theme will be that "you can just thank God you live in America without the government control found in some countries."

F. C. Lovitt Heads Memphis Exchange

MEMPHIS—Fred C. Lovitt of L. B. Lovitt & Co. is the new president of the Memphis Board of Trade. He was elected Jan. 14 to succeed Dixon Jordan of Standard Commission Co.

Elected vice president was W. R. Flippin of Buckeye Cellulose Corp. By custom he will become president in 1957.

Named to the board of directors were H. B. Cooke, Jr., of Humphreys-Godwin Co.; Jack Crutcher of Crutcher & Co.; Leroy Gaston of Marianna Sales Co.; D. J. Guillory of Guillory Sales Co.; James William Phelan of E. E. Buxton & Co.; Harry Tobias of Goldenrod Oil Meal Sales Co., and L. E. Whittenberg of the National Bank of Commerce.

The election was followed by an annual banquet at the Hotel Peabody. Philip A. Ray, general counsel of the U.S. Department of Commerce, was the principal speaker. He was introduced by Ed Jappe of Marianna Sales Co.

A report on the Memphis Board of Trade's activities during 1955 was given by Arthur A. Williams, executive vice president. This included installation of service that placed continuous quotations of the Memphis futures trading on the New York-New Orleans cotton ticker.

Lilly Gift Announced

BLOOMINGTON, IND.—One of the world's largest private collections of rare books and manuscripts has been donated to Indiana University. The donor is Josiah K. Lilly, Jr., president of Eli Lilly & Co., Indianapolis.

David A. Randall, rare book expert, who will be librarian of the university's new collection, said that the gift is valued "in the neighborhood of $5 million."

The collection includes about 20,000 first editions and several thousand original manuscripts and documents.

Recovers From Illness

CHILLICOTHE, MO.—Rudy Eschenheimer, president of the Rudy Eschenheimer Co., Chillicothe, Mo., has returned to his office after a severe illness of several weeks. Mr. Eschenheimer was hospitalized with pneumonia.

Superior Separator Co. Opens Pasadena Office

HOPKINS, MINN.—The announcement of the opening of a Pasadena, Cal., office was made by the Superior Separator Co., Hopkins, manufacturer of tanks for bulk delivery of commercial and special feeds, and the "Fluidizer," trade name of a machine for "pumping" solids.

The office, located at 919 D East California St., Pasadena, will be under the direction of T. H. (Ham) Hamlin, Jr., regional sales supervisor of bulk handling operations. It will be a sales and service office for the West Coast.

Alfalfa Hay Shortage Noted in Pacific N.W.

SEATTLE, WASH. — Dwindling alfalfa supplies in the Pacific Northwest, particularly in Washington, have prompted a move to alleviate the situation.

It was reported during the week that the State of Washington and the U.S. government may participate in a program wherein the U.S. will absorb a part of the freight charges on alfalfa hay shipped in from other states.

Apparently a disaster situation exists due to the damage from the early freeze, floods and adverse weather conditions.

Alfalfa markets remained firm to strong in the area during the week ended Jan. 16. Good quality alfalfa comparable to U.S. No. 2 green was quoted nominally at a range of $40 @42 ton baled, delivered Portland, Ore., by trucks. The same grade continued to be quoted at as high as $48 ton, baled, f.o.b. Seattle.

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ENERGEE PULVERIZED OATS
MIXERS' PULVERIZED OATS
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Expanding Poultry Operations Seen in Chick, Poult Hatch

WASHINGTON—The current and predicted increases in poultry operations are readily apparent in the U.S. Department of Agriculture's report this week on commercial hatchery production of chicks and poults.

While December is far from being one of the biggest months for over-all chick and poult hatching, it is interesting to note that hatchery output of chicks and heavy breed turkey poults last month was up sharply from a year earlier. Also, large hatches were foreseen for January. (Also see table on this page.)

Turkey Operations—The number of heavy breed poults hatched during December totaled 966,000, compared with 539,000 in December, 1954. Indicating a big January hatch, the number of heavy breed eggs in incubators on Jan. 1 totaled 2,660,000, compared with 1,460,000 on Jan. 1 last year.

Continuing the decline in light breed turkey production, the number of light breed poults hatched during December totaled 938,000, compared with 1,655,000 in December, 1954. The number of light breed turkey eggs in incubators on Jan. 1 totaled 1,346,000, compared with 2,018,000 a year earlier.

For all of 1955, the heavy breed poult hatch was reported to be about the same as a year earlier, while the light breed hatch was off 27% from 1954. The respective totals for the year were 51,326,000 and 15,848,000.

Chick Operations—The output of chicks by hatcheries during December was the largest of record for the month. The number produced was 118,774,000, compared with 86,971,000 in December, 1954. The previous record hatch for December was 116,198,000 in 1953. (See state and area table on this page.)

USDA noted that demand for chicks for both broiler production and egg production has been strong, and a record or near record hatch in January is in prospect as the number of eggs in incubators on Jan. 1 was 32% larger than a year earlier.

Increases from a year ago in numbers of chicken eggs in incubators on Jan. 1 were reported to be 16% for New England, 46% for the middle Atlantic states, 26% for the east north central region, 17% for the west north central states, 38% for the south Atlantic region, 35% for the east south central states, 34% for the west south central region, 22% for the mountain states and 28% for the Pacific Coast region.

During December approximately 44% more broiler chicks were placed in 13 principal areas than a year earlier. Of the chicks hatched during December, 102,006,000 were for broiler production and 16,768,000 were for other purposes.

Looking back over 1955, the total chick hatch for the year was 1,821,452, compared with 1,860,615 the year before. Broiler chick production was up, while flock replacement chick numbers declined.

Providing some indication of the increase in the size of 1955 broiler production, the report shows that chick placements in 13 principal broiler areas during the entire year were up 11% from a year earlier.

Poults Hatched and Eggs in Incubators

(000's omitted)

Selected states	Poults hatched during Dec., 1955 Heavy breeds 1954	Heavy breeds 1955	Light breeds 1954	Light breeds 1955	Eggs in incubators Jan. 1, 1956 Heavy breeds 1955	Heavy breeds 1956	Light breeds 1955	Light breeds 1956
Pennsylvania	3	3	78	42	14	5	63	47
Ohio	0	13	144	102	0	16	119	151
Michigan	0	0	2	10	0	2	0	10
Minnesota	53	243	350	162	281	613	374	158
Virginia	83	79	478	358	166	301	575	490
California	195	248	99	48	671	901	181	138
Other states*	199	380	504	216	328	922	706	352
United States	539	966	1,655	938	1,460	2,660	2,018	1,346

*Combined to avoid disclosing individual operations.

Chicks Hatched by Commercial Hatcheries

(000's omitted)

State and division	During December 1954*	During December 1955†	Jan. thru Dec. 1954*	Jan. thru Dec. 1955†
Maine	2,424	2,992	30,566	34,386
N. H.	1,636	2,830	27,061	31,290
Vermont	41	57	999	896
Mass.	1,608	2,090	25,614	23,745
R. I.	142	330	1,870	3,088
Conn.	3,245	4,546	50,796	56,022
N. Eng.	9,096	12,846	136,905	154,427
N. Y.	1,330	1,750	28,192	26,805
N. J.	1,600	2,204	44,720	39,424
Pa.	3,393	4,437	78,280	73,642
M. Atl.	6,323	8,391	151,192	139,871
Ohio	1,320	1,900	58,900	53,950
Indiana	3,957	5,253	111,713	96,174
Illinois	934	1,511	68,698	52,399
Mich.	501	850	25,406	20,670
Wis.	910	960	25,267	21,730
E. N. C.	7,622	10,474	289,989	244,923
Minn.	135	225	55,000	45,605
Iowa	450	390	78,340	64,700
Mo.	2,552	4,878	97,838	84,722
N. Dak.	55	55	5,672	4,352
S. Dak.	0	0	16,560	13,665
Neb.	130	138	26,490	22,001
Kansas	375	340	28,870	20,330
W. N. C.	3,797	5,936	310,770	255,375
Del.	3,306	4,458	51,026	57,305
Md.	4,972	5,382	66,317	71,057
Va.	4,106	5,694	73,248	71,260
W. Va.	517	810	11,292	11,810
N. C.	4,790	7,540	77,623	93,780
S. C.	700	1,138	13,772	13,294
Georgia	12,265	15,702	157,867	196,889
Florida	1,891	2,677	30,000	27,613
S. Atl.	32,537	43,401	481,145	533,008
Ky.	630	800	19,520	16,100
Tenn.	1,200	1,500	21,965	25,839
Ala.	2,640	3,856	40,350	48,719
Miss.	2,715	4,062	45,746	45,317
E. S. C.	7,235	10,247	127,581	133,975
Ark.	5,159	6,885	73,645	77,106
La.	605	836	9,561	10,291
Okla.	480	670	16,300	15,085
Texas	4,950	7,866	100,000	100,596
W. S. C.	11,174	16,257	199,496	203,078
Mont.	17	17	2,685	2,380
Idaho	162	155	4,482	3,980
Wyo.	0	0	309	197
Colo.	51	30	6,137	4,836
N. Mex.	0	0	636	245
Ariz.	67	66	1,270	1,287
Utah	68	80	3,153	2,761
Mount.	395	348	18,572	15,686
Wash.	1,318	1,500	23,008	20,905
Oregon	855	998	15,214	15,707
Calif.	6,619	8,376	106,743	104,497
Pac.	8,792	10,874	144,965	141,109
U. S.	86,971	118,774	1,860,615	1,821,452

*Revised. †Preliminary.

TURKEY GROWERS' INTENTIONS

(Continued from page 1)

turkeys by 12%, but decrease light breeds by 19%, an increase in total of 8%.

The number of turkeys actually raised may vary from Jan. 1 intentions, the difference depending on prices for feed, supply and prices of hatching eggs and poults and the sale of turkeys remaining in growers' hands. In 1955, growers raised 4% fewer turkeys, about the same as intended on Jan. 1, because turkey prices remained below a year earlier during the growing season and the feed-price relationship was less favorable. The number of turkeys raised in 1954 was 2% larger than Jan. 1 intentions, because turkey and feed prices remained close to the profitable level of a year earlier throughout the main hatching season.

The turkey crop in 1953 was the same as intended Jan. 1, because turkey and feed prices remained fairly steady throughout the hatching season. Number of turkeys raised in 1952 was about 2% larger than intended Jan. 1, despite declining prices during the 1952 hatching season. Growers increased their 1952 turkey production because there was an abundance of cheaper poults throughout a fairly long hatching season and credit was not a limiting factor.

Intentions to Raise Turkeys in 1956

(000's omitted)

State and division	Number raised 1955* Heavy breeds	Light breeds	Total	Intended for raising in 1956 Heavy breeds	Light breeds	Total	Total turkeys 1956 as % of 1955
Maine	165	145	310	206	80	286	92
New Hampshire	114	6	120	103	5	108	90
Vermont	111	4	115	102	4	106	92
Massachusetts	571	45	616	640	45	685	111
Rhode Island	41	4	45	44	4	48	107
Connecticut	276	23	299	298	22	320	107
New York	793	55	848	835	57	892	104
New Jersey	203	131	334	219	118	337	101
Pennsylvania	1,525	553	2,078	1,616	498	2,114	102
North Atlantic	3,799	966	4,765	4,053	833	4,886	103
Ohio	2,021	850	2,871	2,041	833	2,874	100
Indiana	1,328	622	1,950	1,929	249	2,178	112
Illinois	843	64	907	843	67	910	100
Michigan	824	160	984	890	120	1,010	103
Wisconsin	1,330	506	1,836	1,596	380	1,976	108
E. N. Central	6,346	2,202	8,548	7,309	1,649	8,968	105
Minnesota	5,270	2,669	7,939	6,219	2,402	8,621	109
Iowa	4,173	276	4,449	4,382	276	4,658	105
Missouri	1,745	520	2,265	1,815	452	2,267	100
North Dakota	388	110	498	419	55	474	95
South Dakota	338	50	388	375	50	425	110
Nebraska	766	76	842	789	53	842	100
Kansas	617	90	707	623	81	704	100
W. N. Central	13,297	3,791	17,088	14,622	3,369	17,991	105
Delaware	104	867	971	100	997	1,097	113
Maryland	232	324	556	237	418	655	114
Virginia	1,843	3,432	5,266	3,041	2,636	5,677	108
West Virginia	454	946	1,400	613	710	1,323	94
North Carolina	969	164	1,124	1,104	66	1,170	104
South Carolina	835	245	1,080	1,144	20	1,164	108
Georgia	273	6	279	303	4	307	110
Florida	117	31	148	129	31	160	108
South Atlantic	4,818	6,016	10,834	6,661	4,882	11,543	107
Kentucky	269	70	339	293	65	358	106
Tennessee	125	15	140	150	10	160	114
Alabama	94	114	208	97	115	212	102
Mississippi	97	15	112	112	15	127	113
Arkansas	792	340	1,132	792	425	1,217	108
Louisiana	64	7	71	75	10	85	120
Oklahoma	463	155	618	477	146	623	101
Texas	2,427	390	2,817	2,743	343	3,086	110
South Central	4,331	1,104	5,437	4,739	1,129	5,868	108
Montana	56	18	73	54	12	66	92
Idaho	135	21	146	128	18	146	100
Wyoming	9	6	15	16	6	22	147
Colorado	790	70	860	972	40	1,012	118
New Mexico	38	10	48	44	10	54	112
Arizona	28	3	31	106	4	110	130
Utah	2,028	730	2,758	2,375	511	2,886	105
Nevada	7	3	10	8	2	10	100
Washington	703	75	783	743	64	807	103
Oregon	1,276	236	1,512	1,531	248	1,779	118
California	9,260	833	10,093	10,093	712	10,805	107
West	14,386	2,008	16,394	16,068	1,627	17,695	108
U. S.	46,977	16,089	63,066	53,452	13,489	66,941	106

*Preliminary.

FIRM INCORPORATES

FREEMAN, S.D.—Incorporation of Park Lake Feed, Inc., Freeman, S.D., has been announced. Directors of the firm include Lewis A. Kleinsasser and Jerome, Lydia, Stewart and Denver Kaufman.

Case Against Rail Rate Increase to Take Shape Jan. 23

CHICAGO—Walter R. Scott, executive vice president of the Kansas City Board of Trade, will meet here Jan. 23 with other milling and grain traffic men to outline the industry's case against the 7% general rate increase in freight rates sought by the railroads.

Mr. Scott is in charge of preparing the general statement which will be filed with the Interstate Commerce Commission Feb. 3.

This will be the first time millers and the grain trade have opposed a general rate increase request by carriers, and the opposition is being made on the grounds that further increases in rail rates would be detrimental to their interests and slow up grain and flour sales.

ICC must reject or suspend the new rates announced by the railroads before Feb. 25 or the increase will take effect. After the complaint against the increase is filed Feb. 3, opportunity for cross - examination will be provided before the ICC in Washington with oral arguments before the commission scheduled for Feb. 20.

Wedding Set for Feb. 4

CHICAGO—Plans for the wedding of Richard L. Kathe, American Feed Manufacturers Assn., Chicago, to Miss Colleen Geoffray, were announced this week by the parents of the bride-to-be. The ceremony will take place at Our Lady of Mount Carmel Church, 692 W. Belmont Ave., Chicago, Feb. 4 at 11 a.m.

DANGERS NOTED

(Continued from page 1)

pointed out previously, more of the heavy breed birds have been sold at light weights.)

Not only is the turkey intentions report disturbing to USDA officials, a more alarming confirmation of the trend is found in the latest USDA hatchery report. (See story on this page.) This report shows that heavy breed turkey poult production was up sharply in December from a year earlier, and numbers of heavy breed eggs in incubators, plus an earlier report on intentions to retain breeders, indicated big hatches in January and later months.

Figures on numbers of heavy breed eggs in incubators indicate increases from a year ago in almost all parts of the nation.

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Air view of Grain Processing Corporation plants

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Primary Fermentation Products

Riboflavin — Vitamin B-12 — GP-101, source of whey and other unidentified growth factors

Nutrition Findings Described At Kansas Feed Conference

By JAMES W. MILLER
Feedstuffs Editorial Staff

MANHATTAN, KANSAS—As the energy content of poultry feeds is increased the minimum levels of all critical nutrients also should be increased, Dr. G. F. Combs, poultry department, University of Maryland, College Park, declared in one of his two discussions at the eleventh annual Kansas Formula Feed Conference at Kansas State College on Jan. 9-10.

(An earlier story summarizing a large part of the program appeared in the Jan. 14 issue of Feedstuffs. The remainder of the conference is reported here.)

The ultimate goal of broiler, layer and turkey feeders is efficiency and economy of feeding, Dr. Combs said. Increasing nutrient levels along with energy insures that these nutrients are supplied in proper quantities to meet the animal's requirements more efficiently. Consequently, the protein or amino acid requirements of chickens and turkeys can no longer be accurately stated in terms of percent of protein in the ration without qualifying the level of energy contained in the feed.

Dr. Combs cited observations showing that the ratio of energy to protein (C/P ratio) must be considered along with the many other nutritional aspects of poultry feeds to provide adequate and yet efficient rations. Quality of the protein is equally important, and the minimum level of each essential amino acid also should be related to the energy level in the feed.

Dr. Combs gave the following estimated calorie-protein ratios for use in formulation of poultry rations:

Ration*	C/P ratio†
Chicken	
Broiler and chick starter (0-6 wk.)	42
Broiler finisher (6-9 wk.)	49
Laying or breeder ration:	
50% production	64
70% production	59
90% production	56
Turkey	
Starter (0-6 wk.)	30
Grower No. 1 (6-12 wk.)	40
Grower No. 2 (12-18 wk.)	50
Finisher (18-24 wk.)	60
Breeder	60

*Total ration basis.
†C/P ratio equals—Cal. prod. energy (Fraps) / Crude protein, %

Dr. Combs also reported on Maryland findings which show that the addition of relatively high levels of fat to properly fortified all-mash rations improves growth rate. In most of the studies, he said, the addition of 10-15% fat has improved growth by approximately 10%. In several trials it was found that one can add fat up to 30% with no detrimental effect.

Whether or not this improved growth rate is due to increased nutritive density or palatability of the feed, or to some other property in fat has not been determined. This development, however, is of definite interest and does have limited practical application at the present time, Dr. Combs said. It will be important to determine whether or not pelleting of feeds containing different levels of fat tends to partially displace the value of the added fat from the standpoint of improved growth in such rations.

The speaker analyzed the comparative results of 1954 and 1955 Maryland field broiler trials, indicating the improvement in feed efficiency as the energy level is increased. The averages for the two years are shown in Table 1.

The feeding of laying and breeder chickens and turkeys was discussed in another talk given by Dr. Combs at the conference.

He noted that egg production requires higher protein levels than for activity and maintenance functions. As the level of production increases in any flock, the minimum percent protein required in the total feed also increases. Levels of protein above 15% have proved beneficial for high producing flocks in some recent studies.

The estimated protein needs of the hen, together with the level required in her ration to meet those needs at different levels of production, are shown in Table 2.

Body size of the hen also affects the feed requirements, Dr. Combs noted. For example, a 3½-lb. hen laying at the rate of 250 eggs per year would need to increase feed intake approximately 69% over that required if she laid no eggs. For the same level of production, a 7-lb. layer would need to increase her feed intake only 44%.

The small hen in high production must be able to consume considerably more feed per unit of weight than the heavier hen to maintain high production. Pelleted feeds or high energy all-mash feeds are needed to insure an adequate feed intake for high producers.

The speaker went on to analyze levels of certain nutrients in rations for laying and breeding chickens and turkeys. For reference purposes, Dr. Combs presented Table 3, showing suggested minimum nutrient levels for use in practical rations for laying and breeding hens and turkeys. In most instances the levels are higher than those considered minimal by the National Research Council. This is to provide adequate safety margins so that feeds will be suitable for practical use, he said.

Vitamins for Dairy Cattle

Ruminants have simple needs for vitamins, Dr. L. A. Moore, dairy husbandry research branch, Agricultural Research Service, USDA, Beltsville, Md., said in his discussion on vitamins in dairy cattle nutrition. Their needs are limited to those vitamins that are not synthesized in the rumen, or A, D and E.

Too little vitamin A and cows reproduce poorly as denoted by premature births, stillborn calves and retention of the placenta. Calves deficient in A during the first three or four months usually die of scours and pneumonia. After the milk feeding period, calves depend upon the carotene of good quality hay for most of

Table 1—Average Results Obtained in Maryland Field Broiler Trials During 1954 and 1955

Year	Productive Energy in starting ration cal./lb.	Protein level, % (starting ration)	Average weight, lb.	Feed/ weight	Mortality, %
1954 (10 wks.)	913	21.8	3.14	2.86	1.6
1955 (9 wks.)	1025	24.5	3.20	2.31	1.7

Table 2—Influence of Egg Production on Level of Protein Required in Ration (calculated)

Total annual feed consumption per hen,* lb.	Est. protein requirement† per hen per year, lb.	Est. required protein level of ration, %
	Non-layer	
74	8.1	11.0
	100 eggs per hen per year	
88	11.7	13.3
	200 eggs per hen per year	
102	15.3	15.0
	300 eggs per hen per year	
116	18.8	16.1

*Values calculated for 6 lb. hens.
†Based on observations of Graham (1934) that 11% protein level was adequate for non-laying pullets and that 15% protein was adequate for supporting an annual production of 200 eggs per hen.

UNCLE TOM'S

FEED FABLES

It was back in the days before the first World War. Everyone in our company affectionately called the boss the "Old Man."

Horse feed was our big item and we were just gettin' into the poultry feed business but the "Old Man" thought we were off our base to be spending money as a little back yard business and that's just about what it amounted to. There weren't hardly any feed stores then as we know them today. Fire departments, transfer companies, milk wagons and city street cleaning departments took about everything we could make.

But the younger generation recognized that the horse and buggy days were just about over and that trucks would eventually replace the horse-drawn vehicle.

At one of our first sales meetings on poultry feeds one of the younger salesmen told the "Old Man" that one of his customers had asked him what we had in our laying mash. I remember like it was yesterday. The "Old Man" rose in all his dignity—and he had plenty of it. He said:

"Young man, if anybody ever asks you that question again you tell them that if you were smart enough to know how to make a feed that would double a hen's laying capacity, you wouldn't be out on the road selling it, you'd be making it yourself!"

In those days we didn't register feeds and we didn't have any analysis tags. A salesman wasn't supposed to know what the bag contained, that was top secret information. All he was told was what it would do and how much it cost the buyer.

Wouldn't you hate to buy and sell our present day farmers with no more information than that?

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Table 3—Suggested Levels of Certain Nutrients in Practical Rations (Total Feed Basis) for Laying and Breeding Chickens and Turkeys

	Laying chickens	Breeding chickens	Breeding turkeys
Productive energy, cal./lb.	900–1000	900–1000	850–950
Crude protein, %	15–18	15–18	15–16
Calorie-protein ratio*	56–64	56–64	60
Calcium, %	2.25–2.5	2.25–2.5	2.25
Phosphorus, % (available†)	0.45–0.5	0.45–0.5	0.5
(total)	.75– .8	.75– .8	0.75– .8
Salt (added), %	0.5	0.5	0.25–0.5
Iodine, mg./lb.	0.5	0.5	0.5
Manganese, mg./ lb.	25	25	25
Vitamin A, IU/lb.	3500–4000	4000–5000	4500–5000
Vitamin D_3, ICU/lb.	400–500	500–600	600–700
Riboflavin, mg./lb.	1.2–1.6	1.7–2.0	2.0–3.0
Pantothenic acid, mg./lb.	3–4	5–6	8–9
Vitamin B_{12}, mcg./lb.	1.5	3	3
Choline, mg./lb.	450	450	450
Niacin, mg./lb.	15	15	15
Folacin, mg./lb.	0.2	0.25	0.32

*Calories of productive energy per pound divided by per cent of crude protein (varies with rate of egg production).
†Includes phosphorus from inorganic sources, animal sources and 30% of that from plant sources.

their vitamin A needs. An intake of 60 to 70 micrograms per pound of body weight should be an adequate requirement, he said, and in terms of good quality hay this should be about 1 lb. a day per 100 lb. body weight on calves past four months of age. In calf starters a level of 5% dehydrated alfalfa meal in the ration is suggested.

On vitamin D, Dr. Moore indicated that the minimal requirements appear to be about 100 I.U. per 100 lb. of body weight per day. For optimum growth 300 to 400 I.U. is recommended. He concluded by giving the symptoms of some of the vitamin deficiencies.

In recent years it has been shown, under certain conditions, that calves can develop a vitamin E deficiency, Dr. Moore said. The disease is sporadic in its occurrence and has been prevented and cured by giving vitamin E.

Effect of Urea

The fact that urea can be used as a partial protein replacement for growing dairy heifers and milking dairy cows has been well established, said Dr. F. C. Fountaine, department of dairy husbandry, in introducing a talk on the effect of urea on digestibility of rations by dairy cattle. In most experiments, he said, it was found that nitrogen from urea was slightly inferior to that in protein from vegetable sources for growth or milk production, but in most instances the differences were insignificant.

The speaker noted that from in vitro experiments, it was indicated that there might be a stimulatory effect on cellulose digestion by the addition of low levels of urea. Therefore an experiment was designed to determine the effects of low levels of urea on growth of dairy heifers. Identical twins were used. Rations used were a control ration with soybean meal and no urea, a ration with 1% urea and with 3% urea. These trials were then compared with tests run in an artificial rumen.

Digestion trials were conducted on four sets of twin heifers after they had been fed the experimental rations for periods ranging from four to eight months. The control ration contained 40% soybean oil meal; the first urea mix 33.6% soybean oil meal and 1% urea and the second urea mix 20% soybean oil meal and 3% urea.

The average digestion coefficients of nutrients in rations fed to the animals were of little significant difference. When similar mixes were run in the artificial rumen, there was no good comparison to draw with the live experiments. Therefore, Dr. Fountaine concluded, we can report no significant differences in the digestibility of nutrients between rations containing urea and a ration containing equal protein equivalents from vegetable sources.

Swine Nutrition

An up-to-the-minute summary of developments in swine nutrition was given by Dr. J. L. Krider, vice president of McMillen Feed Mills, Fort Wayne, Ind. He listed these advances:

(1) Amino acid balance in the ration and quality of proteins used are vital in modern rations. Tryptophan is the limiting amino acid in meat and bone scraps and tankage for balancing corn for pigs and lysine is

(Continued on page 67)

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Corn Under Loan Shows Increase

WASHINGTON — The amount of 1955 crop wheat put under the Commodity Credit Corp. loan program as of Dec. 15, 1955, was 30% less than at the same time a year earlier, the U.S. Department of Agriculture announced this week. However, the attraction of the corn loan program against the open market is evident in the substantial increase in that loan account.

Of the 1955 wheat crop, loan commitments as of Dec. 15 amounted to about 223 million bushels as compared with about 350 million bushels a year earlier, indicating that the wheat loan account for 1955, which closes Jan. 31, 1956, is not likely to reach the 1954 crop total.

USDA figures show that farmers had committed on Dec. 15 nearly 89 million bushels of corn to the CCC loan umbrella, whereas at the same date in 1954, only 19.5 million bushels were pledged. The largest part of the corn loan commitment occurred between Nov. 15 and Dec. 15 when nearly 77 million bushels entered the loan account.

Another attraction for the loan program is soybeans, where approximately 23 million bushels are under loan. This level is slightly below the loan quantity at the same time the year before when from a smaller crop approximately 26.5 million bushels of beans were loan impounded.

Sorghum grain loan impoundings as of Dec. 15, 1955, were about the same as a year earlier at 43.5 million hundredweights.

MOST EFFICIENT

Research at Michigan State University shows that light weight hens are the most efficient producers of eggs.

Growth of Grain Movement by Truck Cited in St. Joseph Exchange Report

ST. JOSEPH, MO.—Wheat arrivals at St. Joseph in 1955 fell off greatly from those recorded in 1954, according to N. K. Thomas, secretary of the St. Joseph Grain Exchange.

"Heavy increases in the volume of coarse grains moving by truck with the attendant by-passing of established markets cost the terminal trade heavily in 1955, and came primarily as an aftermath of repeated increases in rail grain rates," Mr. Thomas said in his review of the year.

"No appreciable change in the volume of wheat under tent storage at St. Joseph appears to have been undertaken in 1955," he continued. "The 1954 movement into this type of storage was not repeated during 1955, and as a result the wheat arrivals at St. Joseph fell off greatly from those recorded in 1954."

Here are the comparative figures on St. Joseph receipts and shipments of grain, in bushels as recorded by the St. Joseph Grain Exchange:

Receipts	1955	1954
Wheat	11,602,100	25,099,270
Corn	5,642,560	8,687,360
Oats	6,058,120	6,173,780
Rye	3,460	27,680
Barley	350,900	304,000
Sorg. Grains	446,780	1,146,320
Soybeans	2,261,000	2,052,750
TOTAL	26,319,920	43,491,140
Shipments		
Wheat	7,252,670	6,316,900
Corn	3,030,720	6,110,720
Oats	750,480	960,520
Rye	3,460	3,460
Barley	7,600	1,900
Sorg. Grains	610,540	347,100
Soybeans	161,000	329,000
TOTAL	11,816,470	14,069,600

"The approximate 3 million-bushel loss in corn receipts reflects in the main," Mr. Thomas said, "the loss of corn traffic to truck transportation. With the Nebraska corn crop only 95,200,000 bu. in 1955, or 41% of the 1954 production, a heavy movement by truck occurred from northwest Missouri and western Iowa to supplement feeding needs in Nebraska. Another important trade factor is the depressed corn price level at St. Louis and in Illinois, resulting in cheap corn offerings to southwestern Missouri and to the Southwest in general. Missouri River corn prices are higher than the Illinois competition, but generally below prices paid by trucks in the Missouri Valley area."

Mr. Thomas said that the value of grains moving inbound to St. Joseph in 1955 was approximately $50 million.

"Trucking of coarse grains has gained heavily in the Southwest, notably Oklahoma, Arkansas and Texas," Mr. Thomas said, "and trucks have paid premiums for corn in the northern surplus area sufficient to defeat terminal prices by several cents per bushel. Pending is petition of railroads and shippers to the Interstate Commerce Commission for approval of a substantial cut in corn rates to the Southwest, which if granted should be of material aid in restoring coarse grain traffic to rails and markets."

"Grain rates by rail have undergone an approximate 75% increase since 1947, and the resulting levels have made by-rail traffic easy prey to cross-country truck competition," he continued. "As the grain marketing system is mainly geared to rail handling, the present situation is highly inimical to established lines of grain business. Radical changes in the means and methods of grain transportation and handling are in the offing, lacking effective revisions by the rail lines.

"Barge line service, while moving on the Missouri River, has made little impact on local grain handling, as equipment and volume are too small to register any important influence other than to afford an outlet for grain purchased from trucks and needing a non-tonnage outlet," Mr. Thomas said.

Step-Up Grit SALES with Our New KING SIZE FEEDERS

Weighs Approx. 22 lb.

Your Grit sales go up when you Display-Feature-and-Sell the New King Size, Easy to Stack, Self Feeding GRAN-I-GRIT Feeder Pack. It SAVES Poultry Raisers, Dealers and Jobbers both Time and Labor handling heavy Bags and releases valuable storage space.

GRAN-I-GRIT HAS EYE APPEAL
Tests by leading poultry authorities have proven that layers prefer a grey grit with dark specks . . . the GRAN-I-GRIT TYPE . . . as much as 10, 15 and even 100 to one over grit of other colors.

GRAN-I-GRIT

THE GRIT WITH THE SHARPEST GRINDING EDGES EVER CUT

Nationally Advertised

GRINDS FEED FINER

GRAN-I-GRIT, with its sharper grinding edges, grinds feed finer in the gizzard. Finer grinding of feed releases more nutrients from the grains and grasses that birds consume.

BETTER USE OF FEED

Because GRAN-I-GRIT releases extra nutrients from feed, birds get more body-building nourishment. Pullets develop bigger, stronger and faster with less feed and when in production they produce the same number of eggs with LESS FEED AND WITH LESS COST.

These extra nutrients also help speed the growth and feed conversion of broilers. Faster growth and quicker marketing of broilers mean better profits.

USED BY LEADING POULTRY BREEDERS

Leading poultry breeders and Top commercial egg producers, use and recommend GRAN-I-GRIT. They know from experience how GRAN-I-GRIT helps improve livability of chicks, growing stock and layers, and how GRAN-I-GRIT's New King Size Feeder Pack is unbeatable where birds are separated into breeding pens.

GET THE FACTS

Take time out now and write for our new GRAN-I-GRIT Free Booklet that tells how GRAN-I-GRIT Saves and Makes Poultry Raisers More Money and How GRAN-I-GRIT will Step Up your Grit Sales. Also gives full details on retail and jobber opportunities.

NORTH CAROLINA GRANITE CORPORATION MOUNT AIRY, NORTH CAROLINA

N.C. Feed Tonnage Shows Increase

RALEIGH, N.C.—The North Carolina Department of Agriculture reports that the state's feed tonnage in November was 96,963. This compares with total sales of 93,158 tons in the same month of 1954.

For the first five months of the 1955-56 fiscal year, the total tonnage was 478,049, up from the total of 457,459 tons in the corresponding period of the preceding year.

Ask the MERCK MAN

Whether your problem is in mixing microingredients or giving your formulations the advantages of recent discoveries, the Merck man is a good man to know. He can place at your disposal Merck's vast research and production facilities—and hundreds of man-years of technical service experience with micronutrients and therapeutic agents in feeds. Get the Merck man in on your problem next time he calls, or contact him through the Merck sales office nearest you.

ATLANTA • BOSTON • CHICAGO • DALLAS
KANSAS CITY • LOS ANGELES • MINNEAPOLIS • NEW YORK
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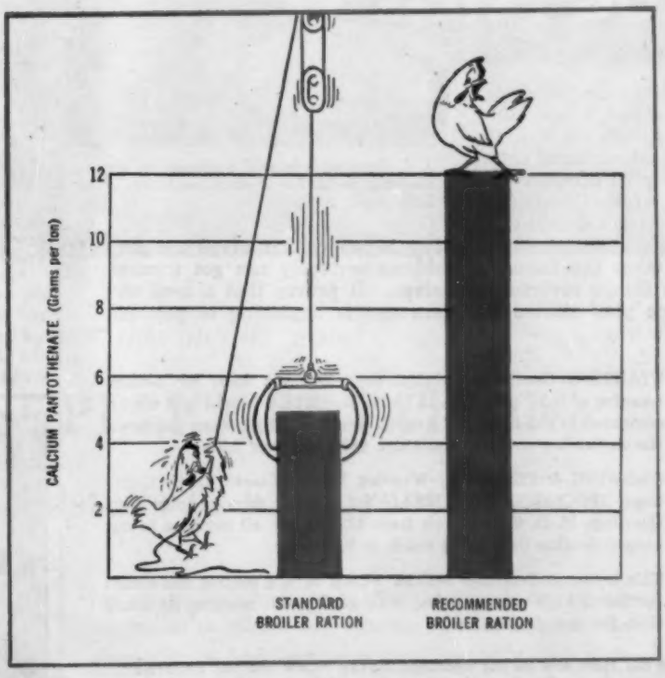
High energy rations require more CALCIUM PANTOTHENATE to convert extra calories into pounds of gain

Modern broiler rations supply more calories per pound of feed. So, today's broilers make greater and faster gains on less feed. With the greater energy content of these new rations, overall feed intake is decreased. Therefore, to assure the required vitamin intake, these rations must contain higher vitamin levels.

Take advantage of latest research by adding MERCK CALCIUM PANTOTHENATE or one of the Merck multi-vitamin mixtures containing calcium pantothenate. These are available for all types of poultry and livestock rations—designed for precision in handling and economy in shipping and storing.

NEW FORM—
DL-Calcium Pantothenate-Calcium Chloride Complex now available

CALCIUM PANTOTHENATE MERCK



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RAHWAY, NEW JERSEY

"A little Methionine may save up to 17% Feed Energy."
Quotation from an eminent Feed Nutritionist.

METHIONINE—

- **"The Economical Feed Additive"**
  So stated two authorities in a recent issue of FEEDSTUFFS.
- **"Methionine Has Made Possible Improvement in Protein Quality"**
  Says another Nutritionist.
- **IF YOU ARE NOT USING METHIONINE, YOU ARE NOT MAKING THE BEST FEED POSSIBLE!**

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PROFITS ARE HIGH!
FOR GEERLINGS' DEALERS
. . . even with
12-15 CENT HOG PRICES

J. J. Geerlings, America's pioneer of dry weaning meal for 3-week weaning of baby pigs.

Geerlings customers can sell for less, because they can produce for less. It's the combination of better feeds plus direct-to-the-farm service through our highly trained feed specialists that does the trick. It again proves that a feed company that takes the farmer's problems seriously can get tonnage when things reverse themselves. It proves that a feed and service plan started 15 years ago is beginning to pay off. Here's why:

1. STARTING Geerlings (original dry) Weaning Meal for 3-week weaning of baby pigs adds 15 to 20 lbs. EXTRA weight at 8 weeks, compared to old-fashioned 8-week weaning. That means shortened starter feeding periods, plus extra gains at lower costs.
2. GROWING & FINISHING Weaning Meal, followed up by Geerlings SPECIAL BETTERMEAL for young, growing pigs plus Geerlings H. B. 40 for finish from 125-225 lbs. all combine to cut normal feeding time by as much as 30 days.
3. This low-cost Geerlings 3-STEP PLAN of hog feeding has meant continued high volume sales, with good profit margins on every sale, for our dealers.

Get the facts now on the Geerlings 3-STEP PLAN and the attractive Geerlings dealer set-up. Write to:

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BOX 179 WATERLOO, IOWA

BUY and SELL through WANT ADS

Relief Feeding Underway as California Shakes Off Flood

By ROY HITCHCOCK
Special Writer

EDITOR'S NOTE: The recent devastating flood in California has had a serious effect on livestock and poultry operations in the flooded area and has hurt feed supplies and disrupted normal feed distribution. In the following article, Roy Hitchcock, California agricultural writer, reports on some of the results of the floods.

Although reports and estimates of damage to California's flood-covered acres continue to come in daily, the full economic loss in dollars and cents may not be completely known for many months.

Thousands of acres of California agricultural land were flooded as a result of an unpredicted week-long rain and heavy winds, with a loss of hundreds of millions of dollars.

With recent new floods, the agricultural damage estimates have been raised to $500 million, with 600,000 acres affected.

The feed situation has appeared to be fairly well in hand, although livestock and the livestock industry were severely hit. In Humboldt County alone, some 1,200 head of dairy cattle and 700 head of sheep were known to have been drowned in the flooding waters, and not all losses were immediately reported.

Beef cattle in most areas escaped the floods because of access to higher

• • •

Texas Feed Man Comments on Flood

SAN ANTONIO, TEXAS—A Texan's view of the recent severe flood damage in California was provided this week by Ira D. Armstrong, sales manager of Liberty Mills, San Antonio.

Returning from a trip to California Mr. Armstrong commented on some of the devastation he saw and the need for water and flood control in all areas.

Five weeks ago when his plane landed in San Francisco, Mr. Armstrong was told that the worst flood in history was raging in that area, and while visiting his daughter and grandson in nearby Richmond, Cal., he had occasion to witness first hand some of the tragic scenes.

"In many instances," Mr. Armstrong said, "entire poultry houses in the lush poultry area at Petaluma (said to be the largest egg producing section in the world) were washed out entirely, and on up in Yuba City and Merrysville, as well as Santa Rosa, there were losses that were staggering indeed. In one instance an entire dairy farm was floating downstream.

"All of northern California has been so hard hit by floods that many producers will be discouraged in trying to go back into business—that is, if they can get loans to cover their needs so they can resume operations at all; and some won't ever recover entirely."

Mr. Armstrong said that in his opinion, the country needs a system of multiple dams to catch the much-needed water for future use and prevent floods.

"This is true in Texas, too, where for six long years we have been in the midst of the greatest drouth of all time," he declared. "In California, the flood damage was more than enough to build many of these dams."

Cut Labor Costs $1040

One man loads the Hytrol. No heavy lifting, just tip the bag against the belt. Another man at the top places the bags. According to a Wyoming user, these two men with a Hytrol stack more bags than four to six men did manually.

If you use your Hytrol 10 hours a week you save a minimum of two men's work or 20 man-hours. Twenty man-hours a week saved will total $1,040.00 in just one year.

This sturdy Hytrol is built to last a lifetime. Cuts labor cost of stacking, loading, unloading. Roll where you need it, moves bags or boxes in either direction, saves $1,040.00 or more a year used 10 hours a week.

For all facts and prices write:
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AN ECONOMICAL SOURCE of High Quality PHOSPHORUS

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SALES AGENTS: Warner Brokerage Co., Inc., Minneapolis; Carroll Swanson Sales Co., Des Moines; James P. Sprigg Co., Los Angeles; Berger & Plate, San Francisco; H. J. Stoll & Sons, Inc., Portland, Ore.

ground, with a consequent report of high losses in Sutter County only. Poultry losses, on the other hand, were high because many flocks were on low, easily flooded ground. One poultryman lost 10,000 hens when 4 ft. of silt covered the henhouse floor.

Feed Problem

The main problem for livestock men after the floods was feed. The livestock organizations in the state immediately requested the governor to designate disaster areas in the state for the purpose of obtaining Commodity Credit Corp. relief grains. Ezra Taft Benson, secretary of agriculture, took immediate steps, and on Dec. 19 relief was granted for feeds for persons whose supplies had been wiped out by the surging waters.

Within 24 hours after the request to the governor, 25 tons of relief grains were on the way to East Nicolus in Sutter County, scene of the worst flooding. The California State Department of Agriculture, along with the Department of Civilian Defense, has been the chief leader in the feed program, dubbed "Operation Cow Feed." It was not long before some 700 to 1,000 tons of relief feed and grain had been supplied to hungry animals.

(Also see the story on page 63 on the U.S. Department of Agriculture's recent designation of disaster areas where farmers may obtain feed and grain at reduced prices under the government's emergency feed program.)

First reports indicate that the feed situation has not been too serious as yet, the California Cattlemens Assn. reports, but it may become acute a little later on. A canvass of feed dealers and wholesalers in the stricken areas shows little damage to storage of grains or feeds. However, feed supplies on individual farms in the path of the floods were wiped out and natural feeds such as pasture and range were either under water or had a coating of silt deposited by the receding waters. In many mountain areas, although flooding didn't occur, slides and washouts on roads all but isolated ranchers from the outer world. Here it is expected that if roads can't be opened or repaired in time, it may be necessary to fly in feeds. Wet hay was another danger point and farmers were warned to be on the alert for signs of heating hay and internal combustion.

Feed Businesses

Retail feed dealers in the path of the floods, although damage did occur, did not suffer as badly as other businesses because their floors were higher and therefore not flooded quite so severely. Mill pits, however, were flooded in many cases and had to be pumped out and motors, if wet, sent to the repair shops. During the storm, lack of electric power idled many plants. On the whole, retailers suffered less than many other enterprises, such as farms that had stored their harvested grains of barley, rice and corn in bins on low ground.

Although damage to personal prop-

(Continued on page 62)

Be able to bid when the buy is good

METHIONINE-SUPPLEMENTATION

lets you interchange feedstuffs to fit current prices

You can keep your feed formulations flexible when you include Dow methionine at low levels in your broiler and turkey rations. Methionine-supplementation allows you to adjust feed formulas to take advantage of current prices. It allows you to buy ingredients that are priced lower or are more available at trading time—because you can adjust their methionine content to the exact level needed for top feed efficiency. When you register your feeds, we suggest you include methionine-supplement to balance any variation in natural methionine when you use feed ingredients interchangeably. This gives you wider formula latitude which can save you money. We shall be glad to furnish your nutritional adviser with complete information. THE DOW CHEMICAL COMPANY, Agricultural Chemical Sales Department, Midland, Michigan.

you can depend on DOW AGRICULTURAL CHEMICALS

DOW

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FEED STORE MOVES

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NEW MILL COMPLETED

MONTICELLO, MINN.—The Monticello (Minn.) Feed Mill Co. has completed construction of its new mill and has opened for business.

With DEMON Steamed Rolled Oats In Your Feeds

Customers Can See ALL THE OATS!

Adds New Sales Appeal

. . . Plus Extra Values Offered

Only By "Table Quality" Steaming!

Feeders like to see substantial quantities of rolled oats in the feeds they buy. When you use Demon *Steamed* Rolled Oats, customers can see ALL the oats because Demon's full ten-minute live steaming keeps the groat whole! All flakes—no meal to get lost in your mix, as with cold rolled oats. Your feeds look better . . . sell better. Demon's "Table Quality" steaming makes your feeds more palatable and more digestible—factors which show up in the feed lot and mean repeat sales for you.

NOW AVAILABLE! NEW 50 LB. PAPERS FOR MORE OVER-THE-COUNTER SALES!

To meet increasing popular demand, Demon Steamed Rolled Oats are now available in 50 lb. papers. Your customers will appreciate this new package, it means more business for you.

- **Pulverized Heavy White Oats**—for mixers preferring fine ground oats . . . one high quality grade.
- **Steamed Crimped Oats**—less separation of groat from hull . . . more digestible.
- **Steamed Rolled Barley**—for greater palatability, more digestibility in fitting rations.

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With CCC Fine Grind Calcium Carbonate you get peak distribution in your feed . . . this helps the animal to give peak performance.

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325 W O W. Bldg., Omaha, Neb.

JOIN SUCCESSFUL DEALERS!

SELL Nutrena FEEDS

Dr. W. C. Tully

IN NEW JOB—Dr. W. C. Tully on Jan. 1 joined the American Feed Co., New York, as sales manager. For the past two years he has been nutritionist with Loret Mills, a division of Seed - Feed Supply, Chattanooga, Tenn. He has had 34 years' experience in the poultry business and has been in animal and poultry nutrition work since 1937. The American Feed Co. manufactures dehydrated wafer meal, dehydrates and processes bread crumbs, and also makes a processed dextrinized high energy corn product for dogs, mink, calves, young pigs and broilers. Plants are in New York, Philadelphia and Red Oak, Ga. Ira and Bernard Feifer head the company.

Hoosier Turkey Trot Scheduled for Feb. 7-8

LAFAYETTE, IND. — Turkey nutrition, disease and merchandising problems will receive attention at the Hoosier Turkey Trot scheduled for Feb. 7-8 at Purdue University.

Sponsored by Purdue and the Indiana State Poultry Assn., the event opens at 10:30 a.m. Feb. 7 and is to adjourn shortly after noon on Feb. 8.

Here is the tentative list of speakers and their topics, as announced by the association; Dr. R. L. Kohls, agricultural economics department, Purdue, "The Way It Looks in '56"; Dr. W. J. Stadelman, poultry science department, Purdue, "Problems in Marketing a Good Quality Frozen Turkey"; Stanley J. Marsden, poultry husbandryman, USDA, Beltsville, Md., "Feeding and Management for High Quality Turkeys"; Dr. Earl N. Moore, Ohio State University, "Blackhead and Coccidiosis"; Dr. Wilson Henderson, veterinary science department, Purdue, "Typhoid and Paratyphoid"; Prof. Roy E. Roberts, poultry science department, Purdue, "Levels of Protein for Turkey Fryers," and M. C. Small, executive secretary-treasurer, National Turkey Federation, "Your N.T.F. Reporting."

Two panel discussions are planned. Participants in a merchandising panel will be Mr. Small, Sheldon B. Swann, Roland Keesling and Al Livers, with Dr. Ray Wilson to do the moderating. R. W. Parsons will lead a discussion on the area trends in turkey production in which Gene McConnell, Charles Reed, Spencer Thayer, Lawrence Bartley and Neil Morrow will participate.

A highlight of the annual banquet the evening of Feb. 7 will be entertainment by the Purdue Varsity Glee Club.

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PAPER PLAIN OR PRINTED
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TWINES
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INDIANAPOLIS, IND.

Alabama Poultry Group Plans Convention

MONTGOMERY, ALA.—The annual convention of the Alabama Poultry Industry Assn. will be held June 12-14 in the Thomas Jefferson Hotel, Birmingham.

The Alabama Hatchery Assn., the Alabama Feed Assn., the Alabama Poultry Processors Assn., and the Alabama Poultry Producers Assn. are all affiliated with the APIA and all organizations cooperate in staging the convention.

W. L. Walsh, P.O. Box 567, Montgomery, is executive secretary of the group.

BECOMES OWNER

MORNING SUN, IOWA—Elburn McElhinny has assumed ownership and management of McElhinney's Farmers Feed & Supply Co. here.

BUFFALO, NEW YORK

In 1924, Cereal, in order to service the rapidly growing Feed Manufacturing Industry in the East in a more efficient manner, opened a Feed Brokerage office here. For the latest market trends and trading quotations

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CHAMPION

MILL AND MIXER UNITS

Keeps YOU Ahead of Competition

CHAMPION mobile grinding and mixing equipment is made for exactly the type of service that will keep YOU ahead of competition. These powerful, all hydraulic units will outperform any other grinding and mixing units in volume of output and excel them in uniform mixing of formula feeds.

With CHAMPION'S big, 110-cu. ft. capacity, and its superior, faster grinding action, you're ahead because you'll spend less time on each job and process more tonnage in a day.

Regardless of the type or amount of ingredients—wet or dry materials; light or heavy liquid or oil injection; you're ahead with a CHAMPION because it blends and mixes them all—UNIFORMLY AND WITH FORMULA ACCURACY—batch after batch.

Because CHAMPIONS are competitively ahead in performance and in quality of mix, Champion owners are competitively way ahead in their business.

Let us help you make a survey of the area in which you want to extend your business with ON-THE-FARM sales. Write today for full information. No obligation, of course.

You can pay more money, but you can't buy better feed grinding and mixing equipment!

CHAMPION PORTABLE MILL CO.
2109 COMO AVENUE SOUTHEAST - MINNEAPOLIS 14, MINNESOTA

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- **Steamed Crimped Oats**—less separation of groat from hull . . . more digestible.
- **Steamed Rolled Barley**—for greater palatability, more digestibility in fitting rations.

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Dr. W. C. Tully

IN NEW JOB—Dr. W. C. Tully on Jan. 1 joined the American Feed Co., New York, as sales manager. For the past two years he has been nutritionist with Loret Mills, a division of Seed - Feed Supply, Chattanooga, Tenn. He has had 34 years' experience in the poultry business and has been in animal and poultry nutrition work since 1937. The American Feed Co. manufactures dehydrated wafer meal, dehydrates and processes bread crumbs, and also makes a processed dextrinized high energy corn product for dogs, mink, calves, young pigs and broilers. Plants are in New York, Philadelphia and Red Oak, Ga. Ira and Bernard Feifer head the company.

Hoosier Turkey Trot Scheduled for Feb. 7-8

LAFAYETTE, IND. — Turkey nutrition, disease and merchandising problems will receive attention at the Hoosier Turkey Trot scheduled for Feb. 7-8 at Purdue University.

Sponsored by Purdue and the Indiana State Poultry Assn., the event opens at 10:30 a.m. Feb. 7 and is to adjourn shortly after noon on Feb. 8.

Here is the tentative list of speakers and their topics, as announced by the association; Dr. R. L. Kohls, agricultural economics department, Purdue, "The Way It Looks in '56"; Dr. W. J. Stadelman, poultry science department, Purdue, "Problems in Marketing a Good Quality Frozen Turkey"; Stanley J. Marsden, poultry husbandryman, U S D A, Beltsville, Md., "Feeding and Management for High Quality Turkeys"; Dr. Earl N. Moore, Ohio State University, "Blackhead and Coccidiosis"; Dr. Wilson Henderson, veterinary science department, Purdue, "Typhoid and Paratyphoid"; Prof. Roy E. Roberts, poultry science department, Purdue, "Levels of Protein for Turkey Fryers," and M. C. Small, executive secretary-treasurer, National Turkey Federation, "Your N.T.F. Reporting."

Two panel discussions are planned. Participants in a merchandising panel will be Mr. Small, Sheldon B. Swann, Roland Keesling and Al Livers, with Dr. Ray Wilson to do the moderating. R. W. Parsons will lead a discussion on the area trends in turkey production in which Gene McConnell, Charles Reed, Spencer Thayer, Lawrence Bartley and Neil Morrow will participate.

A highlight of the annual banquet the evening of Feb. 7 will be entertainment by the Purdue Varsity Glee Club.

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Alabama Poultry Group Plans Convention

MONTGOMERY, ALA.—The annual convention of the Alabama Poultry Industry Assn. will be held June 12-14 in the Thomas Jefferson Hotel, Birmingham.

The Alabama Hatchery Assn., the Alabama Feed Assn., the Alabama Poultry Processors Assn., and the Alabama Poultry Producers Assn. are all affiliated with the APIA and all organizations cooperate in staging the convention.

W. L. Walsh, P.O. Box 567, Montgomery, is executive secretary of the group.

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MORNING SUN, IOWA—Elburn McElhinny has assumed ownership and management of McElhinney's Farmers Feed & Supply Co. here.

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It is an addition that helps make Pfizer a prime source for a wider selection of your health and growth-promoting feed ingredient needs.

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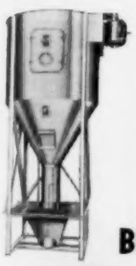

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December Milk Production Up 2% From Year Earlier

WASHINGTON — Milk production on farms during December is estimated by the U.S. Department of Agriculture at 9,023 million pounds—2% above December, 1954, and 12% above the 1944-53 average.

Seasonally, production increased 3% from November to December as compared with an average gain of 4%, USDA reported this week. Relative to population, December, 1955, production was at the rate of 1.75 lb. per capita per day, just slightly above a year earlier and the 10-year average per capita for the month.

Weather in the major dairy areas during December was generally cold except in the West, while on the Pacific Coast, heavy rains caused floods.

The sum of the 12 monthly milk production estimates made currently in 1955 was 124.5 billion pounds, 1% more than the previous record high of 123.5 billion pounds in 1954. This total for 1955 is tentative pending a more detailed analysis of numbers of milk cows and production per cow by states, USDA said.

Production per cow in crop reporters' herds on Jan. 1, 1956, averaged 17.40 lb., compared with the previous record high for the day of 16.47 lb., and 23% above average for Jan. 1.

Seasonally, output per cow increased more sharply than usual from Dec. 1. Regionally, milk flow was at record high levels for Jan. 1 in all major groups of states except the West where the high of last year was almost equaled.

Compared with average, the current Jan. 1 output per cow ranged from 17% above in the western states to 27% above in the West North Central region.

On Jan. 1, crop reporters were milking a record high 69.1% of the milk cows in their herds, about 2% above the proportion milked a year earlier and 5% above the average for the date, USDA reported.

Among the 33 states for which current monthly milk production estimates are made, December output was above last year in 20 states and equaled last year's in five more. Wisconsin, as usual, USDA reported, led all states in December with 1,202 million pounds, followed by Minnesota with 758 million pounds; California, 556 million pounds; Pennsylvania, 514 million pounds, and Ohio with 456 million pounds.

Big Demand for Egg Carton Inserts

CHICAGO — Between Dec. 1 and the beginning of January Egg Month, the Poultry and Egg National Board received orders for over one half million of its new egg carton inserts, according to Dr. James W. Gwin, PENB general manager.

The inserts are four-color recipe cards featuring appealing egg recipes and recipe photos, and catchy artwork and slogans. Space for the buyer's imprint is provided on both sides.

The Connecticut Department of Agriculture purchased 167,000 and the New Jersey Department of Agriculture 100,000 inserts.

FEED STORES MERGE

WINONA, MINN. — The Winona Feed & Implement Co. and the Farmers Exchange Mill, both Winona firms, have merged. Personnel will remain the same.

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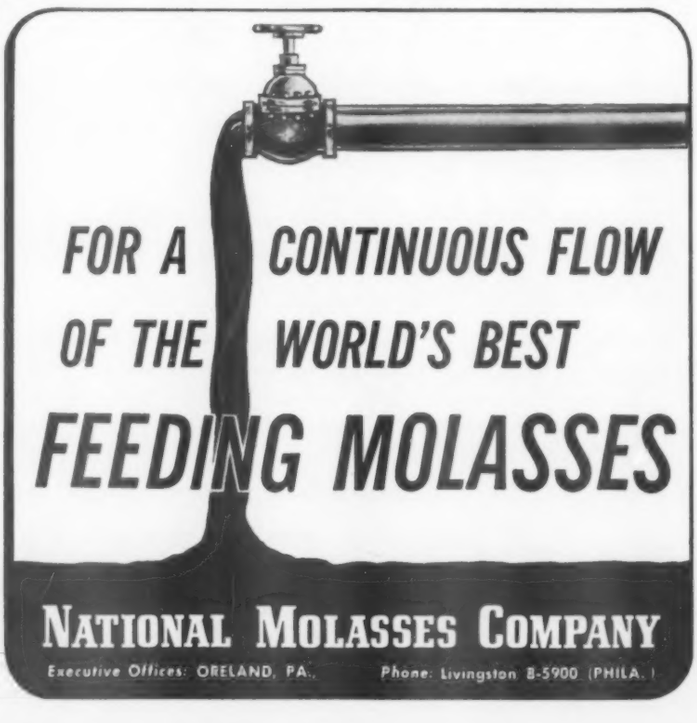
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You've been reading a lot of competitive statements about multiwall bags and service. Many of the statements, including some of ours, are *claims* which can be proved only when you actually use the bags and service. We hope you'll check Bemis claims. And we'll give odds you'll prove them correct.

But there are some *facts*—statistical and physical—which have a direct bearing on the bag quality and/or service you receive.

Here are five Bemis facts, which give you a clear-cut, easy basis for comparison . . .

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Very important to you. Number of plants means volume production . . . bags when you need them. Good location means a short, quick haul to you. Together, they mean SERVICE. Bemis SERVICE means smooth operation for you. And you can maintain minimum inventories . . . or ride through emergencies.

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There is no substitute for experience, of course . . . and Bemis has been making heavy duty paper shipping sacks for over 40 years.

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Bemis has the presses to give you *any kind of result your brand requires.* We print offset or direct. Single or multi-color. Flat color, special effects, or complicated process engraving. You name it . . . we have it. And frequently we've had it longest.

art and engraving facilities . . .

There are art and engraving departments, with experienced craftsmen, at every Bemis Multiwall plant. That means a lot to you in prompt service and quality control.

Quantacolor . . .

Bemis is the only bag maker who can give you the benefits of Quantacolor—the scientific color yardstick that gives your printed brand *more sell.*

SEEING IS BELIEVING . . . SO TAKE A LOOK—You can best judge bag printing by seeing actual examples. So, we have selected one of the difficult brands we print . . . and are making a general mailing of it. You'll recognize the precision and quality of the printing—*the quality of printing Bemis will do for your brand.*

If you don't get a copy of this example in the mail, ask your Bemis salesman to show you one. He'll be carrying it.

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What's New in Feeding

Putting Feed Research to Work

A number of reports on diethylstilbestrol were presented in a recent issue of the Journal of Animal Science (Vol. 14, No. 4, Nov., 1955), and reviewed here are papers from the Ohio and Iowa Experiment Stations. (Other reports on stilbestrol appeared in the Jan. 14 issue of Feedstuffs.)

Bull and Steer Calves—E. W. Klosterman and associates of the Ohio Agricultural Experiment Station report on an interesting experiment designed to study the influence of stilbestrol implants on bull calves and to compare the feed lot performance of steers and bulls. The incentive for this study was that in previously reported experiments by this group of investigators, bull calves made more rapid and economical gains than steer calves when fattened in dry lot. However, the bull calves were more difficult to fatten and graded significantly lower when slaughtered. It was reasoned that stilbestrol implants might change the outcome relative to the carcass grades and the difficulty experienced in fattening the calves.

High quality Hereford bull calves from Texas were used in the 1952-1953 experiment. Eight calves were castrated in October (making the calves some 7 to 8 months old) and put on feed as the control lot of steers. Five of the bull calves were fed for 98 days. Another five calves were implanted subcutaneously in the neck region with 84 mg. of stilbestrol, fed for 98 days, given a second implantation of 132 mg. stilbestrol and fed an additional 84 days. Ten additional bull calves were fed for 95 days, implanted with 132 mg. stilbestrol and fed for 98 days. The remaining 10 bulls were fed without castration or other treatment for the entire experiment.

Another experiment was conducted in 1953-54 using 10 steers and 10 bulls from the same source in Texas. The steers and bulls were divided, and one lot of each was implanted with 84 mg. of stilbestrol per head in December, 1953, and again with the same dosage in March, 1954. The implantations were made subcutaneously in the mid-portion of the ear.

The cattle in both experiments were full fed in an open shed with access to outdoor dry lots. The ration fed consisted of corn and cob meal, soybean oil meal (1.5 lb. daily per head), hay, corn silage (5 lb. daily), about ⅓ oz. daily of salt and some ⅓ oz. of a mineral supplement composed of two parts steamed bone meal, two parts limestone and one part salt by weight.

The bulls in both experiments gained more economically and significantly faster than the steers. The subcutaneous implantation of stilbestrol significantly increased the rate of gain and this increase was greater in the steers than the bulls. Stilbestrol implants significantly increased the grade of bull carcasses but reduced slightly the grade of steer carcasses. There appeared to be no advantage in feeding bull calves (7 or 8 months old) for a period, castrating and finishing as steers.

With the current feed and beef supplies available in this country, the practical application is rather questionable relative to the feeding of bull calves treated with stilbestrol implants. However, if shortages develop or in areas where meat supplies are limited, it appears that the supply of good to choice quality beef could be substantially increased by the use of stilbestrol instead of castrating the bull calves.

Beef Cattle (Steers and Heifers)—Another report of interest is by Burroughs and associates of the Iowa Experiment Station regarding the influence of oral administration of stilbestrol on beef cattle. Five feeding experiments were conducted with either yearling steers or heifers using high grain fattening rations, high roughage growing rations or rations intermediate in grain and roughage content.

In each experiment and on each type of ration, liveweight gains were increased from 20% as an average, and the average reduction in feed required per unit of gain was 11% by incorporating stilbestrol in the feed at a level of 5 mg. to 10 mg. per animal per day. Stilbestrol in the feed increased feed consumption some 5%. The response to stilbestrol was equally effective the last half of the feeding periods as the first half. No observable side effects from stilbestrol occurred in any of the experiments similar to those reported where other means than feeding were used for the administration of stilbestrol.

The results for dressing percents and carcass quality for this series of experiments at Iowa were not contained in this report but will be published in subsequent papers.

FEED MAN DIES

RIVERSIDE, MO. — Lebert H. Scott, 69, owner of the Riverside Feed Store here, died recently. He had operated the feed store for 20 years.

ADDS NEW SERVICE

MANITOWOC, WIS.—The Valders Elevator Co-op has purchased a mobile feed plant.

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JAB is a powerful antibiotic retaining potency for long periods in pellet or powder form.

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WALLOP is a Schenley supplement extremely important in any diet for poultry. Use it in your feeds to give your customer larger and healthier poultry.

SOLUDRI (distillers solubles dried) is the booster ingredient with complete balanced B-G Complex of vitamins.

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How added methionine can assure top efficiency from your high-energy broiler feeds

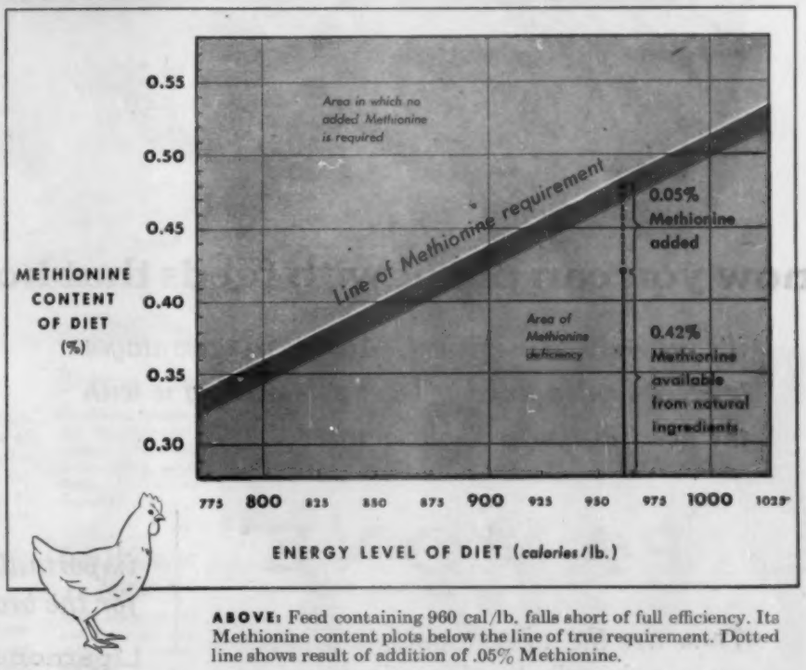
TODAY, high-energy feeds are helping broiler growers produce top-quality birds—faster and at lower cost. Even so, many such rations are failing to deliver full potential in feed efficiency.

HERE'S THE ANSWER

For peak performance a high-energy level in feed must be balanced by the proper amount of *effective* protein. The best way of obtaining an *effective* protein in today's broiler feeds is by use of added Methionine.

Because birds on a high-energy ration consume less feed, each pound must contain extra nutritive values. Therefore, definite amounts of protein and other factors are added in *concentrated* form to bring the ration into balance. But, until recently the amount of *Methionine* required to assure optimum efficiency from feed energy has not been known.

Now, work at the Du Pont nutrition laboratory clearly defines the Methionine-energy concept (see chart). By using this new information, formulators can add the specific amount of Du Pont Methionine needed to balance energy at any practical level. This means new efficiency for many broiler feeds—even those already excellent by present standards.



ABOVE: Feed containing 960 cal/lb. falls short of full efficiency. Its Methionine content plots below the line of true requirement. Dotted line shows result of addition of .05% Methionine.

ASSISTANCE FOR FEED MANUFACTURERS

TECHNICAL HELP—Du Pont personnel are prepared to work with nutritionists in the application of the Methionine-energy concept to broiler feeds.

DATA FOR DETAILED STUDY—Write Du Pont for full information on diets and experimental procedure employed in establishing the new Methionine-energy concept.

LABORATORY RESEARCH CONTINUES to refine and extend the new knowledge about Methionine and its practical applications.

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METHIONINE

BETTER THINGS FOR BETTER LIVING . . . *THROUGH CHEMISTRY*

JOE BROOKS

Do Customers Have to Be Pleased?

Once more it was time to show a skit in the special contest which Joe Brooks had initiated to depict what not to do in order to build a feed business. Pop Henley and his crew had put on the first skit, and now it was time for Smiley Johnson, chairman of the second team, to present his group's idea. On this team were Windy Kramer, Peanuts Steinhart, a seasonal employee, and Rusty Hagen, the small-sized bookkeeper.

There was quite a crowd on hand to see the second skit. Each employee was allowed to bring his wife or girl friend, depending upon his marital status. A couple of salesmen also were present, and so were three judges—feed dealers from other parts of the county. And Mary Brooks was on hand, too, with a movie camera, to film the skits so they could be shown in the future at sales training meetings.

Back in the wings—in reality the mixing room—Peanuts Steinhart said to Smiley Johnson: "You know, after all this rehearsing I feel like I kin leave for Hollywood and a tryout almost any time. Oho, for the life of an actor!" He reached into his pocket and took another handful of salted peanuts, from whence he got his nickname.

"Yeah," commented Windy Kramer. "If you do get a job in Hollywood, you'll be the only actor in the picture. Do you know that peanut breath doesn't smell so nice? Marilyn Monroe would run away if you approached her."

"You're kiddin'," said Peanuts. "I always thought peanuts smelled just as good as they tasted."

Rusty Hagen, the brown-eyed, dark-haired, runty bookkeeper, said, "Who's Marilyn Monroe?"

At this point, Joe Brooks called the group into the salesroom and onto the floor background of which was a feed store interior.

Smiley and his men immediately took their places, that is, they sat around on feed sacks and counters and made no attempt to go to work, although the floor needed sweeping, paper cartons lay in the aisles and stock certainly needed some straightening.

The telephone rang and Windy Kramer answered it. "Hello, what do you want?" he asked gruffly.

The man apparently wanted some poultry feed, and when Windy Kramer hung up, he grabbed a pencil and wrote down the order. Then he groaned: "I didn't ask the man his name," he said tragically, "and he didn't tell me his name. He wanted a ton of feed, too."

"Always get a guy's name when he calls in," Smiley said. "And greet him pleasantly, if you happen to think about it."

He'll Call Back—Maybe

"Don't worry," came in Peanuts Steinhardt. "When the guy doesn't get that ton of feed in a couple of days, he'll call back in and ask what's holding it up. Then you can get his name and send the feed out fast."

Windy smiled with relief. "Gee, that makes me feel better," he said. "For a while I was worried."

A tall lady, with a hat high on her head, came walking into the room. She looked like a woman of local distinction, but in reality she was Peanuts Steinhart's wife who had been pressed into this special role as a lady customer.

"I want some dog food," she said. "I have five dogs and we are going to take them to a dog show next month. I hope we can win some honors with them."

"How much dog food do you want?" asked Peanuts.

"Oh, about 50 lb. My dogs get awfully hungry. I want that new dog food that has vitamin Z in it."

Peanuts looked puzzled. "Vitamin Z? I've never heard of it. This is the best dog food on the market—right here." He placed a hand affectionately on a bag of Smith's Best.

The lady customer looked disappointed. "Oh, haven't you got the food with vitamin Z? They say it does so much for a dog's bones and makes his tail wag more. Can you order some for me?"

Peanuts sighed patiently, but there was a little irritation in his voice, as he said, "Lady, if we ordered every product that's on the market and that folks ask for, we'd have to rent the Armory as a second store. We only stock stuff we have a call for.

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These are the advantages you give growers by offering Liponized feed:

No extra work to do or pay for.

No handling of the birds – no set-back, no wet litter, no shock which might lead to increased susceptibility to CRD and other diseases.

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Adding Lipamone to your feed is easy – 1 lb. of Lipamone plus 9 lbs. of carrier makes 10 lbs. of pre-mix; 10 lbs. of pre-mix in 1 ton of broiler finisher makes a Liponized best-seller.

Premium prices are being offered by alert processors who recognize the quality features of Liponettes.

We are urging growers to discuss Lipamone with their feed dealers. Are you fully acquainted with the Lipamone story? We'll be glad to give you complete information and to answer your questions.

important new words for the broiler industry

Lipamone: a free-flowing feed additive for broiler finishers. It contains 14% dienestrol diacetate, a feminizing hormone, in corn distillers dried grains.

Liponizing: the process of adding LIPAMONE to feed, or feeding birds the LIPAMONE-supplemented ration.

Liponette (TM): a broiler which has been Liponized. The demand for these extra-quality birds means better sales for the grower and processor and profit for the manufacturer who supplies the Liponized broiler finisher.

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We're in business to make money. Ain't that right, Rusty?"

Too Much Stuff

Rusty Hagen, the runty bookkeeper, looked up from his desk. "Sure is, Peanuts. We got too darn much stuff on the shelves now that ain't selling. On new products we always wait to stock them until a big demand is built up. Then we know we ain't takin' any chances when we lay in a supply."

"W—well," said the lady customer. "I'll take 25 lb. of Smith's Best and look in some other stores for vitamin Z dog food. I do want to try some. And if it works out well I'll tell all my friends."

"Yeah, well, let us know how it comes out," Peanuts encouraged. "And if a big demand for it is built up, we might stock it and then you can buy it here."

The woman said nothing, paid her bill and walked regally out of the feed store, with Windy Kramer carrying the bag of dog food to her car.

"It sure beats me," Peanuts Steinhart said, "how customers expect a feed dealer to handle everything under the sun, and then they act mad if you haven't got one item they ask for."

"But on some of these new items doesn't it pay to tell the customer that we'll try and get the product for her, so she won't get mad at us and take all her business elsewhere?" asked Smiley Johnson.

Steinhart shook his head. "No, if you order a product special for them, then they'll keep coming to you and expecting you to order every darn new product they can think of that they might need. They'll buy one package or so, and then the rest of the stuff stays on your shelves."

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"Yeah," said Rusty Hagen. "Customers sure are funny the way they gripe. The way some of them act you would think that we are in business

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Since then, we have bought a Kelly Duplex every time a replacement was necessary or whenever our increasing volume demanded it--until now we have enough of these machines to handle the entire mixing volume in all 5 of our elevators.

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As Mr Eikenberry states elsewhere in his letter, these machines have always done a fast, thorough mixing job—have produced a volume double that of their rated capacities when really needed—and have required only the barest maintenance (an occasional minor adjustment and then only on the 3 oldest machines).

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just to please them, instead of making money selling them stuff they need regularly. If a merchant doesn't stand up for his rights, nobody will. Customers ought to stick to products dealers handle, instead of askin' special favors orderin' new products."

"Exactly," concurred Steinhart, who was playing the part of a dealer in the skit. "Customers should be darn glad some dealer is willing to invest a lot of money in a store and stock near where they live, so they don't have to travel far to buy. But you can't tell them that. They'll say you are selfish! Well, who isn't?"

As the curtain dropped on this skit, there was loud applause from the audience. Once again some good retailing principles had been pointed out by showing some of the things that dealers and employees do wrongly.

Blimp Hannon, who had played a leading part in the first skit a couple of weeks before, came forth rubbing his hands. "Man, I'm hungry. Those hamburgers Mary is frying sure look good. I kin eat about five, if she'll let me."

"You'll never get to Hollywood if you don't reduce," teased Peanuts Steinhart. "Besides, I didn't think your skit with Pop Henley was so good."

Blimp's face got a little red. "You didn't, eh? Well, we will see what the judges say. I'll bet they'll say you fellows practiced yours out in the skunk country."

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Feed Service Bulletin Board

Helpful Notes on Feeding and Management for Feed Men and Their Customers

Check Hog Family for Gilts

Hog men and marketing people are talking a lot about meat type gilts. But a meat type gilt isn't necessarily just a lean hog, says Dr. H. L. Self, swine specialist at the University of Wisconsin. There are several things to consider when selecting gilts for breeding.

Gilts should be selected from well-managed herds, he advises. The buyer should make sure the producer keeps accurate production records and that the herd is disease and parasite free.

Dr. Self says the best way to select a meat type gilt is to have information on the carcasses of close relatives. Carcass information is available in many cases from state swine evaluation stations, extension personnel and purebred breeding organizations. Many purebred breeders who sell gilts participate in a Certified Meat Hog program.

If carcass information is not available, it is wise to determine back fat thickness with a metal or electric probe.

A 190- to 225-lb. animal is about market size, and that animal's offspring will probably be about the same type and weight at an equal age.

Dr. Self says a gilt selected for meat type breeding should weigh 200 lb. in five to six months and shouldn't be fat. The gilt should come from a litter that will make 100 lb. of gain with less feed than other kinds of hogs, and she should have 12 good, evenly-spaced teats.

Selecting gilts early and breeding them to farrow earlier in the season is becoming a common practice, but a gilt produces more eggs in each successive heat period. Thus the chances are good that a gilt will farrow bigger litters if she isn't bred at the first heat period.

Large litters are important, Dr. Self says, because it probably takes about the first five pigs in a litter to pay for producing the whole litter. The larger the litter, the greater the profit.

◆

Reasons for Low Milk Output

Approximately 7,500 lb. of 4% butterfat content milk, or its equivalent, must be produced by every mature cow in the herd each year before the owner can expect to make any profit. It takes that much production to pay feed, labor and other costs, according to G. A. Williams, extension dairyman at Purdue University.

During 1954 nearly 20% of all cows on DHIA test in Indiana fell below the break-even point, Mr. Williams says. He thinks that much of this low production can be attributed to one or more of the following factors:

- Too large a herd for the available feed supply. Without enough high quality pasture, hay and silage, production is likely to be low.
- Neglect of herd health standards. Unhealthy, low-producing cows are seldom culled out soon enough.
- Inadequate feeding and production records. The inefficient cow is not located and sold; thus improvement through breeding, selection and culling proceeds at a slow and unprofitable rate.
- Random selection of replacements. In an average 10-cow herd, two replacements must be added each year. Sometimes replacement cows are selected with but little regard for their health or level of production.
- A false sense of profit on the part of the herd owner. Unmarketable feeds and family labor are often used to produce a regular (and often low) income to meet some operating cost such as living expenses. Culling is avoided because

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Dr. Herrick says that about one out of every five calves born on Iowa farms dies before it grows up. One out of ten is dead before it is a month old. He points out that some dairymen are weaning a 100% calf crop almost every year. Yet many other dairymen are having worse "luck" with calves than the beef producers.

Three simple steps, he says, could turn this loss into a gain: proper care and housing for the cow at calving time, proper feeding of the cow and clean, dry, disease-free housing for the growing calf.

Ninety per cent of the barns are poor risks for calves, Dr. Herrick says. Calves can stand considerable cold if they are dry. But damp, poorly ventilated barns are injurious to calves and are breeding places for the organisms causing scours and pneumonia. Even many tight, warm dairy barns, especially if there has been disease trouble in them, can be bad for calves.

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"Get her away from the rest of the herd," he says. "A calf gets a poor start if it's dropped in a gutter or filthy barnyard."

His advice to the farmer continues: Wash the cow's hind parts and udder so that the calf won't get a mouthful of disease germs the first time it nurses. Don't let the cow labor too long. If she has troubles, call the veterinarian. Don't put dirty ropes and hands into the reproductive tract.

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Poultry House Ventilation

By William A. Aho
University of Connecticut

EDITOR'S NOTE: The importance of poultry house ventilation is not fully understood, according to William A. Aho, extension poultryman, University of Connecticut, Storrs. Nevertheless, Mr. Aho feels that ventilation now is being given more nearly the attention it deserves. In the accompanying article he reviews the problems of poultry house ventilation and tells what practices will improve ventilation. This article is the text of a talk Mr. Aho gave at the recent broiler management and disease control clinic sponsored by Yieldmor Feeds, Inc., Piqua, Ohio.

Poultry house ventilation is beginning to gain some respect that was heretofore given to poultry diseases, and rightly so, because the poultryman is able to recognize some of the symptoms such as (1) a sharp gasping cough in the poultryman's throat, (2) a sloshing noise made by his boots, (3) feeling rain even though under a roof and (4) vigorous tugging at his wallet.

How important is ventilation or what is proper ventilation, still remains to be answered experimentally. The exact temperature, amount of air and relative humidity for various growing conditions should and must be worked out before we can really say we are raising birds in a scientific manner. Such exacting information will take a long time to develop but in the meantime, we must use the information we have on hand from field trials and from common sense.

What are the problems associated with poultry house ventilation?

Winter Ventilation Problems

Respiratory Diseases — Inadequate ventilation and severity of respiratory diseases have been correlated in many field observations. Birds growing in damp, cold, tightly closed buildings, breathing the same air over and over again, are subject to respiratory diseases. Under these conditions there is no air change to dilute disease organisms in the air.

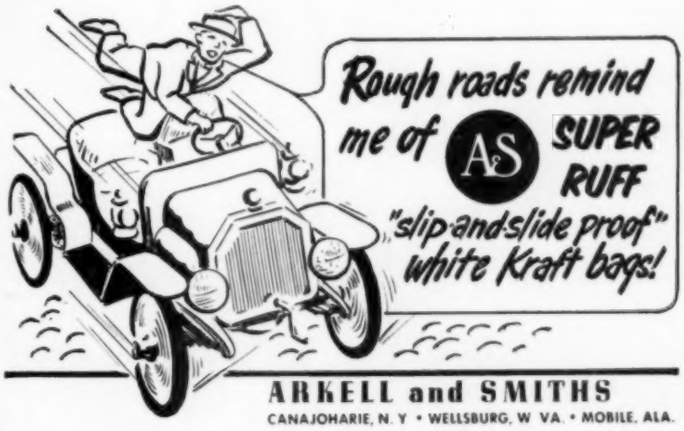
Ammonia — Wet litter producing strong corrosive vapors is capable of corroding any metal in the poultry plant and, without question, is a problem associated with poultry house ventilation.

Excess Moisture — In addition to the wet litter, excess moisture must be removed from the poultry house to conserve the building materials.

Summer ventilation problems are limited to (1) high temperatures that result in poor growth and poor feed efficiencies and (2) dust, which could also be a factor in respiratory problems.

What solutions are there for the poultryman with ventilation problems? There are many factors that combine to produce the air conditions within a poultry house. They may be grouped as heat, air exchange and management. A better understanding of these three basic factors will go a long way toward solving the poultry house ventilation problems.

Heat—In order to remove the dust, ammonia and excess moisture that contaminates the air within a poultry house, we must exhaust the foul air and allow fresh air to take its place. A great portion of the year, the temperature outside is much colder than that inside and the exchange air means that we must temper it to the desired inside tem-



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Poultry House Ventilation

By William A. Aho
University of Connecticut

EDITOR'S NOTE: The importance of poultry house ventilation is not fully understood, according to William A. Aho, extension poultryman, University of Connecticut, Storrs. Nevertheless, Mr. Aho feels that ventilation now is being given more nearly the attention it deserves. In the accompanying article he reviews the problems of poultry house ventilation and tells what practices will improve ventilation. This article is the text of a talk Mr. Aho gave at the recent broiler management and disease control clinic sponsored by Yieldmor Feeds, Inc., Piqua, Ohio.

Poultry house ventilation is beginning to gain some respect that was heretofore given to poultry diseases, and rightly so, because the poultryman is able to recognize some of the symptoms such as (1) a sharp gasping cough in the poultryman's throat, (2) a sloshing noise made by his boots, (3) feeling rain even though under a roof and (4) vigorous tugging at his wallet.

How important is ventilation or what is proper ventilation, still remains to be answered experimentally. The exact temperature, amount of air and relative humidity for various growing conditions should and must be worked out before we can really say we are raising birds in a scientific manner. Such exacting information will take a long time to develop but in the meantime, we must use the information we have on hand from field trials and from common sense.

What are the problems associated with poultry house ventilation?

Winter Ventilation Problems

Respiratory Diseases — Inadequate ventilation and severity of respiratory diseases have been correlated in many field observations. Birds growing in damp, cold, tightly closed buildings, breathing the same air over and over again, are subject to respiratory diseases. Under these conditions there is no air change to dilute disease organisms in the air.

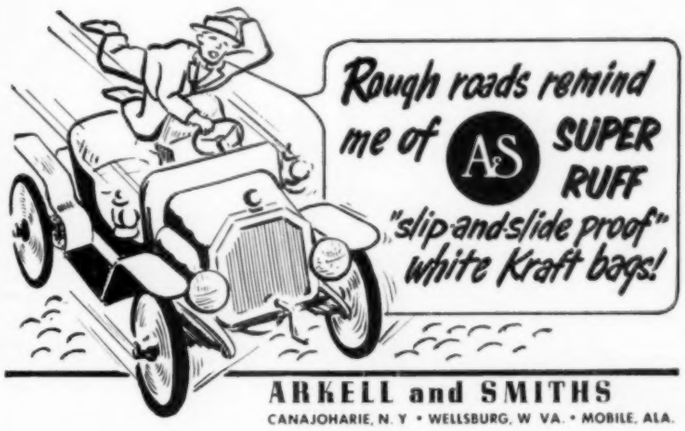
Ammonia — Wet litter producing strong corrosive vapors is capable of corroding any metal in the poultry plant and, without question, is a problem associated with poultry house ventilation.

Excess Moisture — In addition to the wet litter, excess moisture must be removed from the poultry house to conserve the building materials.

Summer ventilation problems are limited to (1) high temperatures that result in poor growth and poor feed efficiencies and (2) dust, which could also be a factor in respiratory problems.

What solutions are there for the poultryman with ventilation problems? There are many factors that combine to produce the air conditions within a poultry house. They may be grouped as heat, air exchange and management. A better understanding of these three basic factors will go a long way toward solving the poultry house ventilation problems.

Heat—In order to remove the dust, ammonia and excess moisture that contaminates the air within a poultry house, we must exhaust the foul air and allow fresh air to take its place. A great portion of the year, the temperature outside is much colder than that inside and the exchange air means that we must temper it to the desired inside tem-



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Hexamitiasis was diagnosed in a flock of ten-week-old California turkeys. High-level BACIFERM was added to the feed. Within 18 hours, the birds showed distinct improvement – enteritis disappeared, feed consumption rose and mortality dropped.

Sick Runts Marketed Before Normal Pigs

An Indiana farmer bought 40 runts averaging 20 pounds per pig and scouring badly. At the same time, he purchased 227 normal pigs. The first night, three runt pigs died. The remaining runts were fed a standard ration fortified with CSC's high-level PENBAC®. In less than five months after purchase, these "runts" were marketed at an average weight of 222 pounds, grading better than #1 Choice. The normal pigs on the regular ration did not reach market until much later.

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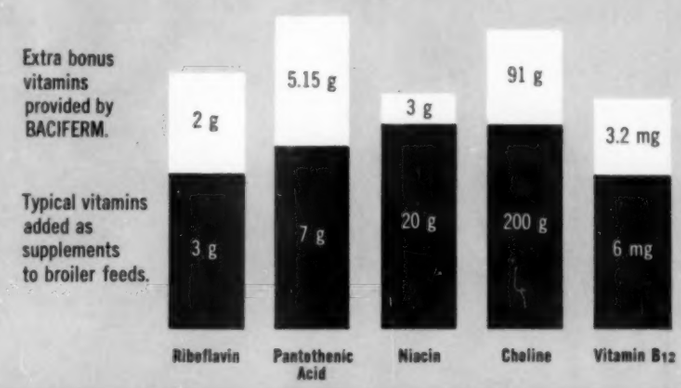

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perature. This makes heat the most important item in ventilation. Varying amounts of heat are produced by the birds themselves, by the decomposing litter, and by the sun. In addition to the heat loss in exchange of air, heat is lost through the walls, ceiling and windows, and heat is being used up in evaporating the daily additions of moisture to the litter.

In broiler houses, supplementary heat is necessary. During the first week, sufficient heat must be available to maintain comfortable conditions under the hover. From the second week on, ventilation becomes increasingly important. Theoretically it should increase along with the increase in body weight of the birds. If fresh air is important, then ventilation must go on day and night, fair weather or foul. When the outside temperature drops, the heating system must make up for the temperature drop as a result of ventilation. This means that instead of turning off the brooders after the normal brooding period, the brooders must be kept going to take care of the increased ventilation needed.

Insulation plays an important role in carrying out the heat requirements for ventilation. We must conserve all the available heat in a broiler house to do a useful job of ventilation. In poorly insulated broiler houses much of the available heat is lost through the walls, ceiling and windows. Ceiling insulation is important regardless of the width of the building. Wall insulation plays a less important role in buildings 36 ft. and wider except in a case where heating units are located on the rear wall. In such instances the rear wall should be insulated. Many times I have seen dandelions growing alongside a broiler house in mid-winter, the reason being obvious. Heat was being lost through the concrete slab floor and foundation. Insulation at this point would prevent the loss of this precious heat. Water falling from the eaves of many poultry houses saturated the ground around the foundation. Wet soil is a good conductor of heat and again creates another leak for the heat that should be available for ventilation.

Vapor barriers are important in so far as they protect the insulation and building materials. Vapor barriers should always be on the warm side of the wall. Normally, the moisture in a poultry house flows from the inside to the outside because of the differential in temperature. The reverse may be true, however, in the floor slab, ground temperatures being higher than room temperatures at certain times of the year, thereby having the movement of moisture from the ground into the pen.

Air Movement — The all-important question asked by poultrymen regarding ventilation is "How much air should be provided for broilers?" The answer for any individual poultry house depends upon the temperature that can be maintained in the house. It would be folly to provide 3 cu. ft. of air per bird per minute if, at the same time, the poultry house temperature was dropped to 10° F. The amount of ventilation, according to field trials and observation, is about 3 cu. ft. of air per bird per minute at 12 weeks of age. This should be graduated according to the age and weight of the birds.

Many broiler houses can be ventilated by gravity. Warm air, being lighter than cold air, rises and escapes from openings near the ceiling. Gravity ventilation has its disadvantages in that when the outside temperatures approach inside temperatures, air movement due to gravity is decreased.

Mechanical ventilation is the most positive method of air movement and also the most expensive. With mechanical ventilation, a definite program of air movement is possible regardless of outside temperatures and wind, but again the total quantities that can be moved depend upon outside temperatures and heat available.

In general, it may be said that heat is a limiting factor as far as ventilation is concerned in most poultry houses regardless of the methods used to move air. Even with mechanical ventilation, it is important that full use is made of the heat available.

Management of Poultry for Improved Ventilation—Improved ventilation will help to minimize some of the problems created by management. On the other hand, management will improve and lessen the burden of ventilation. Due to lack of insulation, location and other factors, many houses are borderline cases as far as ventilation is concerned. In these houses, the management practices carried on may spell the difference between good and bad environment. Improved management practices often require no additional outlay of money.

Following is a summary of the management factors and good practices that will improve ventilation:

Bird density—Allow more space per bird.

Litter—Use large size aggregated to prevent compaction and to improve porosity.

Traffic pattern—Spread equipment proportionately over the floor area to prevent congested areas.

Waterers — Sufficient waterers, widely distributed, allow greater amounts of air to evaporate spillage.

Operation of ventilation system—Constant attention to ventilation systems allows operator to take every advantage of good moisture-removing conditions.

Feed—Excessive salt fiber or protein in feed tends to make litter wet.

In summary, one could say that poultry house ventilation depends upon (1) the conservation and the wise use of heat, (2) air movements and (3) good broiler management factors.

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Poultry International Trade Development Unit Formed

CHICAGO—With its sights set on increased sales of U.S. poultry products abroad, the newly formed International Trade Development Committee held its first meeting Jan. 7 with 53 men representing every branch of the poultry industry from equipment to the finished product, participating.

The committee was formed under the auspices of the Institute of American Poultry Industries with five national poultry associations participating in its formation. It is an outgrowth of the move to expand markets made recently by the Foreign Agricultural Service of the U.S. Department of Agriculture under the provisions of PL-480. (See page 1 of the Dec. 31 Feedstuffs.)

Pointing out that because of increased production, the poultry industry must develop markets beyond the boundaries of the U.S. if it is to enjoy average prosperity, Paul G. Gray, Jr., Institute of American Poultry Industries board chairman, said that the IAPI merchandising committee, executive committee and board have been studying the problem for many months.

"We have been working closely with the U.S. Department of Agriculture, the U.S. State Department, and with exporting companies. Recently the board approved the establishment of this committee and its membership represents not only every branch of our industry but also other national poultry and egg trade associations. This full representation, we believe, is essential since the finished product for export is the combined result of improvement at every level of industry—equipment, feeding, breeding, hatching, producing, processing and marketing," Mr. Gray said at the meeting.

Letters from Ezra Taft Benson, secretary of agriculture; Earl Butz, assistant secretary, and Gwynn Garnett, Foreign Agricultural Service administrator, were read to the committee by its new chairman, J. O. Parker, Washington representative of the institute, as he outlined the opportunities ahead for the poultry industry in foreign trade.

"There is a world-wide demand to up-grade human diets with higher protein levels — more animal products," wrote Mr. Benson. "U.S. poultry and poultry products deserve a place in world markets based on a sure and continuous supply of quality products at competitive prices."

"Vigorous merchandising programs," the secretary said, "and support of sound U.S. trade policies by the poultry industry will lay the foundation for expanded foreign markets."

Dr. D. A. FitzGerald, deputy administrator of the International Cooperation Administration, outlined the functions of ICA in promoting foreign trade and how currencies of foreign nations are used to purchase U.S. goods.

Cooperation Assured

The full cooperation of the Poultry Division, AMS, USDA, was assured by Roy W. Lennartson, deputy administrator of AMS, and Hermon I. Miller, chief of the Poultry Division.

Cliff C. Warren and Herbert W. Ford, Foreign Agricultural Service, told the committee that the government is already helping not only in Washington but in each of the for-

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eign agricultural attaché offices around the world.

"Foreign trade development is the over-all objective of the committee," said Dr. Cliff D. Carpenter, institute president, "but one immediate opportunity is utilizing funds available to industry through PL-480 for promoting our products."

As the first step in getting the program under way, the committee unanimously elected an executive committee to formulate a plan of action. Members of the committee are: Mr. Gray, IAPI; Chester C. Housh, National Turkey Federation; Leslie Hubbard, Poultry & Egg National Board; Jesse D. Jewell, National Broiler Council; O. H. Green, American Poultry Hatchery Federation; D. K. Webster, Jr., American Feed Manufacturers Assn. Consultants to the executive committee appointed were: H. H. Alp, American Farm Bureau Federation; Arlo V. Turner, The Grange Co., Modesto, Cal.; J. O. Parker, IAPI, and H. C. Diehl, the Refrigeration Research Foundation.

The executive committee named Mr. Parker chairman.

The Institute of American Poultry Industries was selected as the official agency through which the poultry industry will work with government in promoting foreign markets.

Mr. Parker was instructed to prepare a contract between the institute and the Foreign Agricultural Service which would be acceptable to FAS and present it to the executive committee at a meeting to be called in late January for its approval.

NEW MANAGER NAMED

MEMPHIS, MO. — The grain department of the Craig Elevator, Memphis, Mo., is now under the management of George A. Craig. R. M. Craig, former manager, will continue to head the feed department.

New Feed Mill in Dominican Republic

WASHINGTON—A new $200,000 feed mill is under construction in the Dominican Republic, according to a report to the U.S. Department of Agriculture from the agricultural attache there.

The new feed mill, which will have a daily capacity of 25 metric tons, will use an automatic scale with push-button control of weighing and mixing.

The technical director has stated that the plant will be able to turn out all types and qualities of feeds. The domestically produced ingredients to be used include peanut cake, corn, wheat standard middlings and shorts, and meat, fish and bone meal. The items to be imported include alfalfa meal, oats, vitamins, potassium, sodium, sulphates and other chemicals.

The plant, which is the only one of its kind in the Dominican Republic, will not have a capacity sufficient for the total feed requirements of the country, but the present capacity of the feed mill can be enlarged.

New Mexico Feeders Day Set for Feb. 27

STATE COLLEGE, N.M.—The program for the 17th annual Feeders Day at New Mexico A&M College will feature information of interest to both livestock feeders and breeders, J. H. Knox, head of A&M's animal husbandry department, reports.

The Feeders Day, slated for Feb. 27, will be followed by a two-day school for New Mexico cattle breeders on February 28-29.

One of the reports on the Feeders Day program will be a summary of A&M's research findings on feeding stilbestrol, and a general review of research and information on feeding this relatively new hormone.

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Contract No. 1	Date 6-14-55
Grower J. L. Shackelford	
No. Started 10,500	
No. Sold 10,444	
No. Lost 56	
% Mortality .53	
Date Started 3-30-55	
Date Sold 6-6-55	
Age 9 Weeks 4 Days	
Weight Sold 32,010 #	
Av. Wt. Per Bird 3.06	
Lbs. of Feed Used 91,300 #	
Lbs. Used Per Bird 8.70	
Lbs. Used Per Lb. Meat 2.85	
Net Cost $4,393.25	
Cost Per Head 60.88	
Cost Per Lb. 19.97	
Profit Per Bird 23.894	
Selling Price 27.94	
90% Profit $2240.76	
10% Profit $248.97	
Total Profit $2489.73	
Loss Per Bird —	
Total Loss —	

VERONA FEED COMPANY
VERONA, VIRGINIA

Contract No. 9	Date 5-14-55
Grower Emmanuel Hatchery	
No. Started 12,00	
No. Sold 7491	
No. Lost —	
% Mortality —	
Date Started 3-16-55	
Date Sold 5-25-55	
Age 9 Weeks 6 Days	
Weight Sold 22,844 #	
Av. Wt. Per Bird 3.05	
Lbs. of Feed Used 66,300 #	
Lbs. Used Per Bird 8.18	
Lbs. Used Per Lb. Meat 2.68	
Net Cost $4,203.79	
Cost Per Head 56.12	
Cost Per Lb. 18.40	
Profit Per Bird 29.27	
Selling Price 28¢	
90% Profit $1,973.28	
10% Profit $219.25	
Total Profit $2,192.53	
Loss Per Bird —	
Total Loss —	

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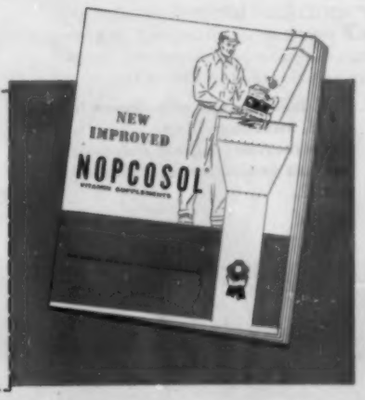
*City*_____ *Zone*_____ *State*_____



Basic producers of Micratized® Vitamins A & D, niacin, calcium pantothenate, choline chloride, and other products

53-Lb. California Turkey Wins Contest

CHICAGO—The state of California proved to Illinois' Gov. William G. Stratton last week that his boast of the Prairie State's turkey raising prowess was a bit over-estimated.

California entered the Governors' Challenge Trophy contest for the world's heaviest turkey with a 53-lb. bird that outweighed its nearest rival —an Illinois bird—by just a shade more than 3 lb.

The winning bird, grown out by Oscar Orlapp and Sons, Orosi, Cal., brought $1 lb. in the auction at the completion of the contest. The buyer was Jiggs Botchlet, Cordell, Okla.

Thirteen birds from 12 states competed in the contest which aroused nationwide interest. Governors in each had sent out a call to turkey raisers to scan their flocks for the biggest and heaviest birds—giants that could "bring home the bacon" from the Chicago convention of the National Turkey Federation.

Illinois, however, came off with second place honors—with a 49 lb. 4 oz. tom raised by Walch Turkey Farm, Raymond, Ill. Texas, came in third with a 48 lb. 6 oz. bird raised by Tom Bingham, Aubrey, Texas.

POOR NUTRITION

Michigan State University swine experts put the blame on poor nutrition of the sow as the most important cause of baby pig losses in the first three days after farrowing.

Ask for it by name

★ More protein
★ More Vitamin-B¹
★ Solvent Extracted Meal or Pellets

Minnesota Linseed Oil Company
Minneapolis 21, Minnesota

Minnesota
36% PROTEIN
LINSEED MEAL

Ted W. Bean

JOINS PILLSBURY—Ted W. Bean has recently joined the feed ingredient division of Pillsbury Mills, Inc., as soybean meal merchandising manager in Kansas City, according to Ken W. Larson, division manager. A graduate of James Millikin University, Decatur, Ill., Mr. Bean was formerly associated with Tabor Grain & Feed Co. of Decatur and more recently with Lauhoff Grain Co. (Soya Division).

Clinton Foods to Open Office in Minneapolis

CLINTON, IOWA — J. H. Wilson, manager of feed and oil sales for the corn processing division of Clinton Foods, Inc., announced recently that the firm will open a Minneapolis office for sales of its feed products, including a new fermentation product.

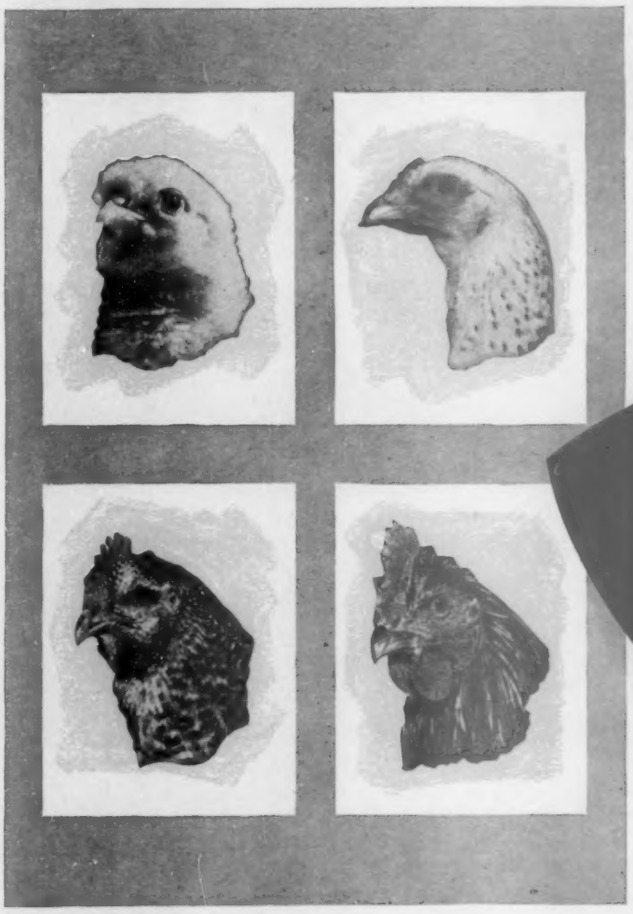
K. E. (Ken) Claussen has been appointed manager of the office.

OPEN HOUSE STAGED

CONCORDIA, KANSAS—An open house was held recently at Dodd Feed & Seed in the firm's new location here. Coffee and doughnuts were served all day at the grand opening and a cash prize was awarded.

News about

B. F. Goodrich Chemical *raw materials*



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As chicks grow...
so grow your profits

GOOD-RITE **DPPD** (N, N'-diphenyl-p-phenylenediamine) improves the condition and therefore, the selling value of feed in four ways:

Stablizes fats and oils—keeps feed fresh, sweet-smelling.
Preserves nutritional values—increases utilization of vitamins A and E.
Increases carotenoid pigmentation —makes broilers more attractive, gets higher price.
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Good-rite **DPPD** is supplied in feed grade (95% minimum purity) as a free-flowing powder for addition to poultry feed in concentrations of ¼ to ½ pound per ton of feed. For samples, additional information or a list of distributors, please write Dept. JD-1, B. F. Goodrich Chemical Company, Rose Building, Cleveland 15, Ohio. Cable address: Goodchemco. In Canada: Kitchener, Ontario.

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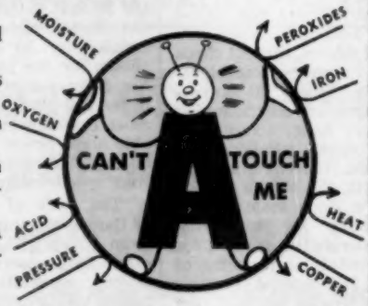
PERMADRY*

*U.S. Patent No. 2496634 Reg. T.M.

SUPERIORITY

1. STABILITY OF VITAMIN A

- PERMADRY Vitamin A stability is unsurpassed by any other form of Vitamin A used in feed.
- Carry-through Vitamin A stability in regular feeds is excellent under all prevailing adverse conditions.
- Carry-through Vitamin A stability is maintained in pellets, crumbles, cubes, and even in biscuits.
- Carry-through Vitamin A stability has been proven in mineral mixes and highly mineralized feed concentrates.
- PERMADRY also protects ingested Vitamin A against destructive elements in the upper gastro-intestinal tract.



ALL WARDED OFF BY PERMADRY

2. BIOLOGICAL SUPERIORITY

Work at leading University Experiment Stations and independent laboratories emphasizes the following advantages of PERMADRY.

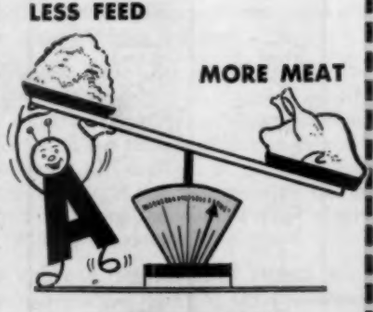
- Improved growth rate and feed efficiency.
- Reduced mortality due to increased resistance to stress factors.
- Increased Vitamin A storage in the livers.
- Increased egg production.
- Increased biologically-active Vitamin A reserves in the egg.

All the above results were demonstrated versus commonly used alternate Vitamin A materials.

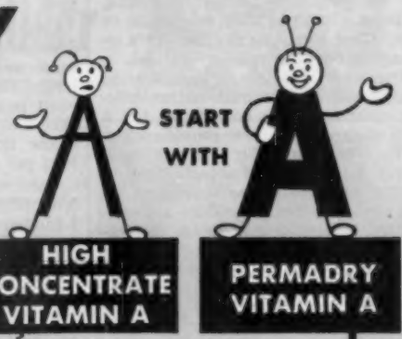
AVAILABILITY

3. IMPORTANCE OF THE CONCENTRATION OF VITAMIN A-ACTIVE MATERIAL IN WHAT YOU BUY.

- The Vitamin A furnished by PERMADRY is contained in *digestible* oil-soluble "beads" uniformly fortified with Vitamin A to levels of about 40,000 units per gram. PERMADRY will furnish 5 to 10 times respectively more Vitamin A "bead material" (Vitamin A-Active) per ton of feed than will high concentrates of 250,000 to 500,000 units per gram when added to feeds to supply the same desired vitamin A unitage.
- For instance, 10,000-A PERMADRY contains about 25% vitamin A-active edible fat, the remainder being high protein soy flour and meal. On the other hand, if for making the same 10,000-A PERMADRY, concentrates as high as 250,000 units per gram were used . . . *only 4% by weight* of Vitamin A-active beads would be present when finally ready for feed fortification. PERMADRY has refused to economize at your expense in furnishing you with a half-way product . . . one which you yourself have to complete by blending down the unreasonably high concentrates to practical use levels and you yourself have to assume the full responsibility for the pre-mix.
- PERMADRY supplies a greater amount of Vitamin A-active material without prior pre-mixing. This relieves you of the otherwise mandatory rigid uniformity control of pre-mixes and responsibility connected with the blending of high potency concentrates with carrier material.



ECONOMY



HIGH CONCENTRATE VITAMIN A

PERMADRY VITAMIN A

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WHAT MIXER?
HOW LONG?
UNDER AIR?

ANALYTICAL CHECKING?

UNIFORMITY CONTROL?

ADJUSTMENT OF POTENCY?

FILLING, WEIGHING, & BAGGING

SETTLING A PROBLEM?

PACKING UNDER INERT GAS?

VITAMIN STABILITY AFFECTED BY YOUR OPERATIONS?

MANUFACTURER'S GUARANTEE?

% VITAMIN A-ACTIVE MATERIALS?

READY TO USE?

ECONOMY AT WHOSE EXPENSE?

PERMADRY TRAVELS AN UNINTERRUPTED DIRECT PATH FROM BASIC MANUFACTURER TO USER . . .

A STRAIGHT LINE IS STILL THE SHORTEST DISTANCE BETWEEN TWO POINTS.

*PERMADRY is the only product which furnishes high energy fat and Vitamin E at no extra cost along with the guaranteed amount of Vitamin A.

PERMADRY goes all the way until absorbed. Availability proven by many tests.

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Feed Mixing Operations Analyzed

Milling Engineer Analyzes Mixing Systems, Provides Mixer Data

One of the principal subjects discussed at the last Midwest Feed Production School was mixing, and in that connection a talk on "Blending Ingredients" was given by T. E. Stivers, milling engineer, Decatur, Ga. As part of his talk, Mr. Stivers presented the accompanying chart and tables.

Mixing System Comparisons—The primary purpose of the chart below (Figure 1), Mr. Stivers explained, is to show an approach that may be used for comparison of different mixing systems when planning new mills or attempting to cut production costs by changing existing mixing systems.

The chart provides a comparative analysis of various push-button mixing systems being considered for a particular set of mixing requirements.

"In this case," Mr. Stivers said, "there was a two-fold object—first, to determine the best system from an over-all viewpoint to produce approximately 10 tons per hour on the initial installation, keeping in mind building costs, future expansion costs, etc.; secondly, it was anticipated that later an expansion would be made to 16 to 18 tons per hour and the initial set-up was to be planned so that the change-over could be made at minimum cost.

"In Case 1, a 1-ton scale, a 1-ton horizontal batch mixer and a 1-ton check bin, followed by a 15-ton-per-hour bucket elevator, were projected. On the conservative basis of two minutes filling time, five minutes mixing time and three minutes discharging time, employing one standard manual discharge gate on the horizontal mixer, the mixing cycle totals 10 minutes. This yields a 6-ton-per-hour theoretical capacity, or a 5-ton-per-hour probable actual capacity based on experience of about 80% of theoretical."

To get an approximation of the cost of each system, the estimated costs of the mixers, check bins and elevators involved in each case were computed on an approximate basis. In Case 1, the estimated cost was about $750 per ton per hour.

Case 1A employed the same equipment as in Case 1, except that multiple air gates under the horizontal mixer were substituted for the individual manually operated gate, shortening the unloading time to one minute. This yielded a theoretical capacity of 7½ tons per hour, with an actual capacity of 6 tons. Thus there was an increase of 1 ton per hour over Case 1, dropping the cost to $666 per ton per hour.

Case 2 employed the same arrangement as in Case 1A. However, it provided for 2-ton batches and a slightly larger elevator, with the tonnage results and cost reduction per ton as shown on the chart.

Case 3, which turned out to be the future choice when the plant is expanded, employed a single 2-ton scale over two 2-ton horizontal mixers in parallel, followed by a larger elevator. This gave an actual capacity of 16 tons per hour at a cost per ton of $560.

Case 4, shows one 2-ton scale and a mixer without a check bin—or the same as Case 2 except for a slightly larger elevator. The cost immediately went back up to about $700 per ton per hour, and the capacity dropped below the initial requirement, to 8 tons per hour.

Continuing, Mr. Stivers said: "Case 5, employing a 1-ton scale above two 1-ton horizontal mixers, without check bin but with a 20-ton-per-hour elevator, yielded the desired 10-ton-per-hour actual output and at the lowest cost per ton per hour, about $475. This particular choice turned out to be the best under the circumstances in this mill, with the simple change of substituting a 2-ton scale for the initial 1-ton scale so that 2-ton mixers could later be substituted for the 1-ton horizontals at the time of the changeover. It happened that this eliminated considerable building cost in the basement that would have been required had a check bin been employed instead of the two mixers.

"Case 5A shows the same arrangement as in Case 5, except that the elevator leg capacity is increased for faster discharge, with a net gain of about 1 ton per hour and about the same cost per ton."

Horse Power and R.P.M. for Horizontal Mixers of Various Types—Table 1 shows the horse power, speed and length-to-diameter ratios in several types of horizontal mixers, both the double ribbon and paddle agitator types. This is shown primarily to indicate the wide spread of horse powers among mixers of the same relative sizes when made by different manufacturers and having different types of agitators, Mr. Stivers said.

This, he noted, makes it particularly important to check with the manufacturer concerned before changing the speed or nature of the material that is being mixed in a given mixer.

For example, under the 1½ ton rating, it will be noted that for the double ribbon mixer No. 1 at 100 cu. ft. rating, 10 H.P. is recommended. For the double ribbon No. 2, with 115 cu. ft. rating, 15 H.P. is recommended, while with the same nominal capacity of 1½ tons, at the 115 cu. ft. rating, 20 H.P. is recommended for the paddle agitator type unit.

"On the speed, taking for example the 30 H.P. 1-ton mixer at 79 cu. ft., the double ribbon No. 2 is recommended for 30 RPM, with 36 RPM shown for the paddle agitator type," Mr. Stivers continued. "This 6 RPM difference may be critical and will most certainly represent a considerable horse power requirement change on any size mixer when operating in that speed range.

"The ratio of length to diameter of the various mixers indicates ranges from 1.3 up to 3.4. Based on this and other data observed, there is no apparent correlation between horse power and length-to-diameter ratio."

Table 1—Horse Power and R.P.M. for Horizontal Mixers of Various Types

Tons rating	Cu. ft. rating	Horse power: Double ribbon No. 1	Horse power: Double ribbon No. 2	Horse power: Paddle	R.P.M.: Double ribbon No. 1	R.P.M.: Double ribbon No. 2	R.P.M.: Paddle	Ratio length to diameter: Double ribbon No. 1	Ratio length to diameter: Double ribbon No. 2	Ratio length to diameter: Paddle
½	37		7½	5		33	36		2.5	1.3
¾	50	7½			25			1.5		
1	79		10	10		30	36		3.2	2.7
1½	100	10			25			3.0		
1½	115		15	20		23			3.4	3.0
2	145		20	25		29			2.9	3.4
2	150	15			17			1.6		
3	200	20			17			2.0		
3	210		25			17			3.0	

Table 2—Average Mixing Times, Horizontal and Vertical Mixers

Based on: (1) Approximate averages for average mixers, formulas, and conditions to secure uniformity of ± 2% on protein.
(2) Actual elapsed time from when mixer is completely charged until it begins to empty.
(3) No premixing in charging or collecting conveyors.
(4) 1% maximum of any one liquid—3% maximum total liquid.

	Mixing time in minutes: Vertical mixers 1-ton	Vertical mixers 2-ton	Vertical mixers 3-ton	Horizontal mixers 1-ton	Horizontal mixers 2-ton	Horizontal mixers 3-ton
Poultry feed (complete formula)...	3	5	10	3	4	5
Poultry feed (concentrate & corn)	3	4	8	2	3	4
Dairy and roughage feeds	6	8	12	3	4	5

Average Mixing Times—The purpose of Table 2, Mr. Stivers said, is to show some approximate average mixing times for both vertical and horizontal mixers under specified average conditions, as shown at the top of the table.

Naturally, he said, the density, granulation, particle size, percentage of liquids being added, requirements or standards for the finished feed analysis, type of mixer being used, etc., all have a distinct bearing on mixing time.

The figures shown are averages of a number of operations and would serve as a starting point for those who have not been able to determine by an analysis for tracer ingredients the exact best mixing time for their particular equipment, formulas and conditions.

Analyzing Mixing Needs — "When comparing mixers, either horizontal or vertical, they should always be compared on the basis of cubic feet of working capacity (which is usually about 90% of the gross capacity), rather than tons, since the actual weight that can be mixed in any mixer varies directly with the weight per cubic foot of the feed," Mr. Stivers said.

"It is an excellent idea to weigh up a box or other container of your most common formulas and ingredients, then calculate the weight in pounds per cubic foot, and keep this information on hand for use when purchasing blending, handling or storage equipment of any kind, since capacities frequently relate almost directly to the density. It is also well to recheck these periodically as new ingredient sources may radically affect the weights."

"If you are purchasing a new or used mixer, it may save much trouble in the long run to discuss thoroughly with the manufacturer your full requirements, including the formulas you plan to mix, the specific ingredients, rates and capacities."

It is well to make certain, Mr. Stivers said, that an analysis of mixers is based on the inside demensions of the mixers and that you have both the gross and working volumes calculated on the same comparative basis.

"This," he said, "is a particularly elusive figure in horizontal mixers as calculated on the basis of volume swept by the ribbon, others basis volume level to the top of the ribbon, and still others on the basis of volume level to the ribbon top plus a certain height above the ribbon top."

Mr. Stivers said the volume may be calculated on vertical and horizontal mixers as follows:

VERTICAL—Volume of cylinder= .7854 D^2 H=cu. ft.

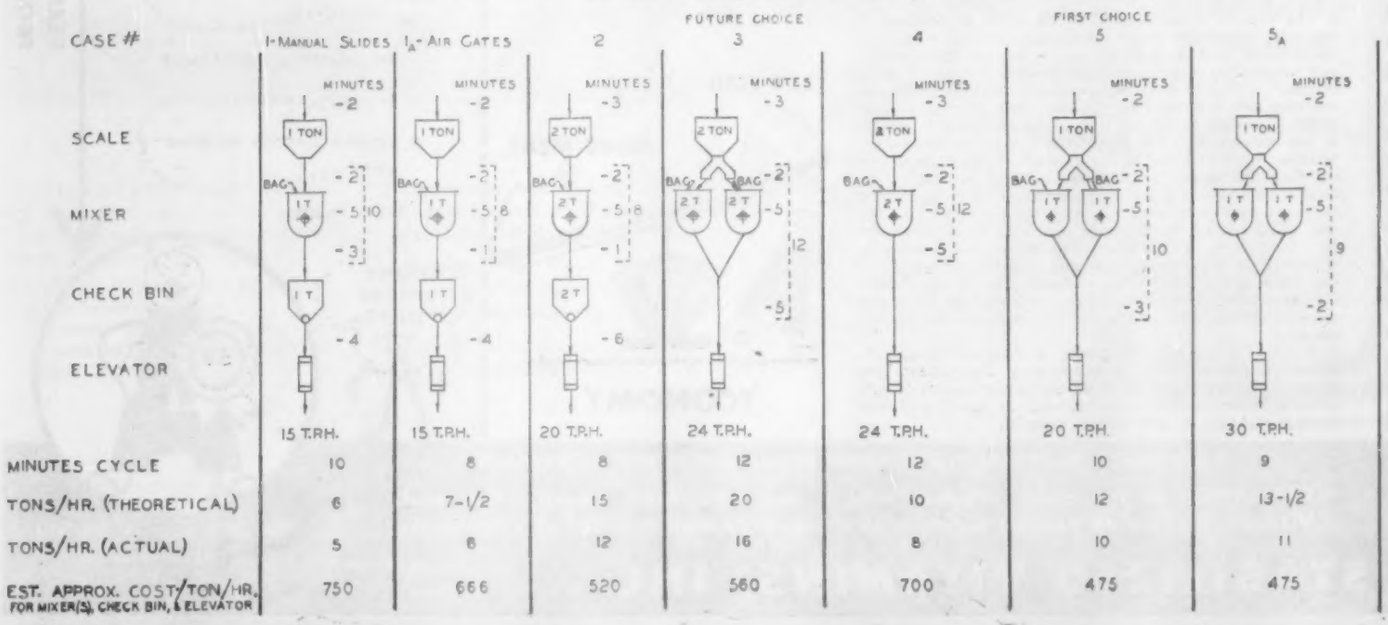
Volume of cone=.2618 h (D^2-Dd-d^2)= cu. ft..

Where D=diameter of cylinder; d =diameter of auger tube; H=height of cylinder; h=height of cone; and all dimensions in feet.

HORIZONTAL —Volume=.7854 d^2 L/144=cu. ft.

Where d=diameter, or width, in inches; L=length in feet.

FIGURE 1—Push-Button Mixing System Comparisons



A sailor was hailed into court for fighting.

"Your honor," he told the judge, "I was in a telephone booth talking to my girl and a guy wants to use the phone. So he opens the door, grabs me by the neck and tosses me out of the booth."

"Then you got angry?" asked the judge.

"Well, a little," replied the sailor, "but I didn't get really mad until he grabbed my girl and threw her out, too."

◆ ◆ ◆

A master sergeant in North Africa was talking to his Texans. "Our job here is to promote good will and friendliness. We've got to be friendly and polite with the natives. If they say Africa is bigger than Texas, agree with them."

◆ ◆ ◆

Nowadays when they speak of a girl reaching that "awkward age" it means that she's too old for teddy bears and too young for wolves.

◆ ◆ ◆

Two Ohio boys got lost driving through Tennessee. Along the deserted road trudged a native of whom they asked, "Which way to Chattanooga?"

The man stared at them, and then asked, "Where you boys from?"

"Ohio."

"I thought so," he said. "Wal, you found it in 1863. Let's see you find it again."

◆ ◆ ◆

Two explorers, camped in the heart of an African jungle, were discussing their expedition.

"I came here," said one, "because the urge to travel was in my blood. The dullness of city life bored me, and the odor of gasoline on the highways made me sick. I wanted to see the sun rise over new horizons and hear the flutter of birds that never had been scared by man. I wanted to leave my footprints on sand unmarked before I came in. In short, I wanted to see nature in the raw. Why did you come?"

"My son's learning to play the saxophone."

◆ ◆ ◆

An icy voice cut into an uninhibited telephone conversation, "Do you know whom you are addressing?"

"No," said the sergeant.

"Well, this is Major Anderson."

"Major," said the sergeant, "do you know whom you are addressing?"

"No!" thundered the major.

"Thank Gawd!" said the sergeant and hung up.

◆ ◆ ◆

Most men like a girl whose life is an open book, especially if her lines are okay.

Shelly Reminds You

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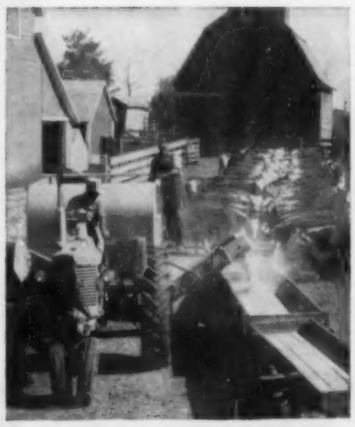
Lilly REPORT TO CATTLE FEEDERS

One year of 'Stilbosol' ...what has it meant to you?

If you are one of the many thousands of cattle feeders who have fed 'Stilbosol'-fortified supplements, and have gotten typical results from the addition of this new gain-booster to your rations, here's what it has meant to you . . .



Your cattle put on approximately 20% more beef over the same feeding period than before you included 'Stilbosol' in your rations. This was accomplished without change in your usual method of handling cattle.

You've gotten those extra gains at about 11% lower feed cost. This together with your extra gains has brought you an average return of about $10 for each dollar invested to include 'Stilbosol' in your rations.

You've probably discovered that the main advantage of 'Stilbosol' lies in getting more beef to market at less cost in the same number of days on feed . . . not in shortening the feeding period for your market cattle.

Better use of protein. Judging from reports of sharply increased use of protein supplements, the addition of 'Stilbosol' has encouraged many feeders to use protein supplements for the first time, or to feed adequate amounts for best results.

Cattle feeders more nutrition conscious. Perhaps one of the most important, if less spectacular effects of 'Stilbosol' on cattle feeding is the vivid proof it gave of the importance of even tiny amounts of certain substances in the ration. 'Stilbosol' seems to have made many cattle feeders more convinced of the dollar and cents value of good feeding practices.

'Stilbosol' works best with good rations. The feeders who got the best results from 'Stilbosol' were those who added it to an already good, balanced ration. The most disappointed were those who tried to use 'Stilbosol' as a short cut with deficient rations. 'Stilbosol' has not changed basic feeding methods or basic rations. In fact, it has re-emphasized the need for sound nutrition by pointing up the value of essential nutrients to take advantage of the faster, more efficient gains.

How will you use 'Stilbosol' in 1956? Around 6,000,000 cattle were 'Stilbosol'-fed in 1955. Good money-making results from 'Stilbosol' mean more will be fed this new additive this year. It looks like 1956 is a year to improve your management and feeding practices even more . . . and your feed supplier who carries 'Stilbosol'-fortified supplements can help. See him now, and get your fattening cattle on 'Stilbosol' right away. He can help you balance your grain and roughage with a good, 'Stilbosol'-fortified supplement.

You've sent cattle to market that graded the same as those that did not receive 'Stilbosol' in their rations.

'Stilbosol' is Eli Lilly and Company's trademark for Diethylstilbestrol Premix. 'Stilbosol' is the only such premix compounded under license from the Iowa State College Research Foundation, Inc.

Stilbosol
(Diethylstilbestrol Premix, Lilly)
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It's stable—lets you be sure of the vitamin E content of your finished feed. Tests show no loss in potency over long, warm storage in finished feed.

It's consistent—you can count on 20,000 International Units of Vitamin E per pound in the form of d-alpha-tocopheryl acetate. This form is the most stable, the most potent biologically.

It's easy to use—the vitamin E in Myvamix is on a soy meal base that's dry, non-dusting, as easy to handle as anything in your mill.

With the growing importance of vitamin E in poultry and animal nutrition, you should know how little it costs to be sure of the vitamin E content of your feed. For information or a quotation, write to ***Distillation Products Industries,*** Rochester 3, N. Y. Sales offices: New York, Chicago, and Memphis • Charles Albert Smith Limited, Montreal and Toronto.

"Myvamix" is a trademark.

producers of **Myvamix** *vitamin E*

Also . . . vitamin A . . . distilled monoglycerides . . . some 3500 Eastman Organic Chemicals for science and industry

DPi

Distillation Products Industries

is a division of **Eastman Kodak Company**

CONVENTION CALENDAR

Jan. 23—Nevada Feed Conference; Univ. of Nevada, Reno; chmn., Dr. J. F. Kidwell, Univ. of Nevada, Reno.

Jan. 22-24—Indiana Grain & Feed Dealers Assn.; Claypool Hotel, Indianapolis; sec., Fred K. Sale, 600 Board of Trade, Indianapolis, Ind.

Jan. 23-25—North Dakota Poultry Industries Convention; Elks Club, Fargo; chmn., Irving J. Mork, North Dakota Agricultural College, Fargo, N.D.

Jan. 23-25 — Southeastern Poultry & Egg Assn.; Municipal Auditorium, Atlanta, Ga.; sec., J. Paul Williams, 615 E. Franklin St., Richmond, Va.

Jan. 26-28—American Dehydrators Assn.; Hotel del Coronado, Coronado, Cal.; exec. V. P., Joseph Chrisman, Dwight Bldg., Kansas City, Mo.

Feb. 3-4—Minnesota Turkey Growers Assn.; Radisson Hotel, Minneapolis; sec., Alfred E. Eisenmenger, 2200 University Ave., St. Paul 14, Minn.

Feb. 7-8 — Hoosier Turkey Trot; Lafayette, Ind.; chmn., David D. Jackson, Ind. Agricultural Extension Service, Lafayette, Ind.

Feb. 7-8—Utah Nutrition and Production Conference; Utah State Agricultural College, Logan; sec., Dr. Lawrence Morris, Animal Husbandry Dept., Brigham Young Univ., Provo, Utah.

Feb. 9-10—Oregon Animal Industry Conference; Oregon State College, Corvallis; chmn., Dr. Don Mishler, Brown Mills, 733 S.W. Oak, Portland, Ore.

Feb. 12-14—Wyoming Grain, Feed & Seed Dealers Assn.; Laramie, Wyo.; sec., Everett L. Berry, Box 118, Sheridan, Wyo.

Feb. 12-14—Grain Processing Machinery Manufacturers Assn.; Edgewater Beach Hotel, Chicago; sec., Raymond J. Walter, 511 Fifth Ave., New York 17, N.Y.

Feb. 17 — Washington State Feed Assn.; Chinook Hotel, Yakima; sec., John G. Wilson, 814 Second Ave. Bldg., Seattle 4, Wash.

Feb. 19-21—Colorado Grain, Milling & Feed Dealers Assn.; Shirley-Savoy Hotel, Denver; sec., R. B. Kelley, 605 Bining Exchange Bldg., Denver, Colo.

Feb. 19-21 — Ohio Grain & Feed Dealers Assn.; Commodore Perry Hotel, Toledo; sec., L. E. Folsom, 222 Chatham Rd., Columbus 14, Ohio.

Feb. 22 — Mutual Millers & Feed Dealers Assn.; Hotel Statler, Buffalo, N.Y.; sec., Mrs. G. A. Bentley, 41 Chautauqua Ave., Jamestown, N.Y.

Feb. 22-23 — Virginia Polytechnic Inst. Nutrition School; Hotel Roanoke, Roanoke, Va.; chmn., Paul M. Reaves, V. P. I., Blacksburg, Va.

Feb. 27-28 — Midwest Feed Mfrs. Assn.; Hotel Muehlebach, Kansas City; exec. V. P., Lloyd S. Larson, 20 West Ninth Street Bldg., Kansas City, Mo.

March 7 — Distillers Feed Conference; Sheraton-Gibson Hotel, Cincinnati, Ohio; sec., Lawrence Carpenter, 1232 Enquirer Bldg., Cincinnati 2, Ohio.

March 15-16—Oregon Feed & Seed Dealers Assn.; Multnomah Hotel, Portland; sec., Leon Jackson, 809 Lewis Bldg., Portland 4, Ore.

March 18-19—Quad-State Convention sponsored by Sioux City Grain, Feed & Seed Assn.; Martin Hotel, Sioux City, Iowa; sec., N. G. Nichols, 901 Missouri River Road, Sioux City, Iowa.

March 18-23 — Grain Elevator & Processing Superintendents; Muehlebach Hotel, Kansas City, Mo.; sec., Dean M. Clark, "Grain," Board of Trade, Chicago 4, Ill.

March 22-23—Maryland Nutrition Conference for Feed Mfrs.; Shoreham Hotel, Washington, D.C.; chmn., Dr. G. L. Romoser, U. of Md., College Park, Md.

March 29—Illinois Swine Growers Day; U. of Ill., Urbana; chmn., S. W. Terrill, Dept. of Animal Science, U. of Ill., Urbana, Ill.

April 3—Purdue Egg Day; Lafayette, Ind.; chmn., David D. Jackson, Ind. Agricultural Extension Service, Lafayette, Ind.

April 5—Texas Feed Manufacturers, Hotel Texas, Ft. Worth; sec., Monroe U. May, P.O. Box 6666, Dallas 19, Texas.

April 6-7 — Texas Grain & Feed Dealers Assn., Hotel Texas, Ft. Worth; sec., Ben Ferguson, 614 Meacham Bldg., Ft. Worth 2, Texas.

April 9-11—American Assn. of Feed Microscopists; Deming Hotel, Terre Haute, Ind.; sec., Robert C. Wornick, Chas. Pfizer & Co., Terre Haute, Ind.

April 12-14—California Hay, Grain & Feed Dealers Assn.; Ambassador Hotel, Los Angeles; chmn., Jack Flammer, 5935 So. Malt Ave., Los Angeles 22, Cal.

April 12-18—National Fisheries Institute; 4-Most Hotels, Miami Beach, Fla.; mgr., Mal Xavier, 1614 20th St., N.W., Washington 9, D.C.

April 16-17 — Nebraska Grain & Feed Dealers Assn.; Hotel Cornhusker, Lincoln; sec., Howard W. Elm, 917 Trust Bldg., Lincoln, Neb.

May 3-5 — Kansas Grain & Feed Dealers Assn.; Kansan Hotel, Topeka; sec., O. E. Case, 901 Wiley Bldg., Hutchinson, Kansas.

May 13-14—Missouri Grain, Feed & Seed Assn.; Kentwood Arms Hotel, Springfield; Sec., D. A. Meinershagen, Higginsville, Mo.

May 21-22 — National Cottonseed Products Assn.; Statler-Hilton Hotel, Dallas; sec., John F. Moloney, 19 S. Cleveland St., Memphis, Tenn.

May 23-25—American Feed Manufacturers Assn.; Morrison Hotel, Chicago; sec., W. T. Diamond, 53 West Jackson Blvd., Chicago 4, Ill.

June 4-5 — Eastern Federation of Feed Merchants; Hotel Commodore, New York; sec., Howard J. Benson, Eastern Federation of Feed Merchants, Sherburne, N.Y.

June 4-5—Georgia Feed & Poultry Conference; Dinkler Plaza Hotel, Atlanta; sec., Will L. Kinard, 208 William-Oliver Bldg., Atlanta 3, Ga.

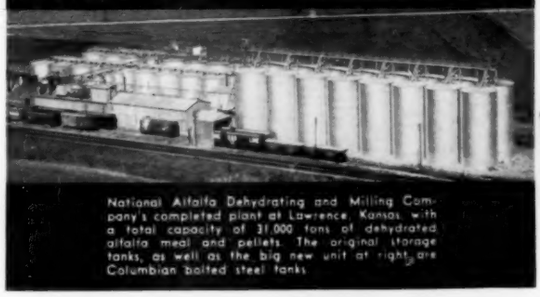
June 6-9 — Grain Processing Machinery Manufacturers Assn.; French Lick Springs Hotel, French Lick, Ind.; sec., Raymond J. Walter, 511 Fifth Avenue, New York 17, N.Y.

June 11-12 — Montana Nutrition Conference; Montana State College, Bozeman; chmn., O. O. Thomas, Montana State College Agricultural Experiment Station, Bozeman, Mont.

June 15—Pacific Northwest Grain Dealers Assn.; Davenport Hotel, Spokane, Wash.; sec., Pete Stallcop, 418 Peyton Bldg., Spokane, Wash.

National Alfalfa Chose These . . .

These 16 Columbian 1,000-ton bolted steel Grain tanks, gas-tight for the storage of dehydrated alfalfa under inert pressure are each 64 ft. high, 32 ft. in diameter. They were designed and erected this year by Columbian Steel Tank Company on a turn-key basis.



National Alfalfa Dehydrating and Milling Company's completed plant at Lawrence, Kansas with a total capacity of 31,000 tons of dehydrated alfalfa meal and pellets. The original storage tanks, as well as the big new unit at right, are Columbian bolted steel tanks.

BOLTED STEEL TANKS

MASTER-CRAFTED BY COLUMBIAN SINCE 1893

To complete the WORLD'S LARGEST STORAGE PLANT for dehydrated Alfalfa under inert gas pressure

It started in 1948 with two 100-ton capacity Columbian tanks—the pioneer installation of dehydrated Alfalfa storage under inert gas pressure. Later additions brought capacity to 15,000 tons. And this year the same installation at Lawrence, Kansas, became the world's largest such plant with the erection of sixteen 1,000-ton Columbian Bolted Steel Grain Tanks. Their total capacity of 16,000 tons more than doubles the previous storage facilities.

National Alfalfa Dehydrating and Milling Company required large capacity, gas-tight tanks for the storage of their Jack Rabbit brand of alfalfa pellets and products. This relatively new storage method preserves as much as 90% of the precious vitamins in the alfalfa. The sound engineering and trouble-free service given by these gas-tight tanks . . . plus their ease of erection made Columbian first choice.

Whatever your storage requirements are in Bolted Steel Tanks . . . for Alfalfa . . . for any small grains . . . for gas or liquid tight installations . . . Columbian should be your source of supply.

All preliminary engineering is free. You may order bare tanks with foundation plans, or tanks erected, as desired. Complete turn-key installations are also available. Write us how we may serve you.

Visit our booth at Hotel Del Coronado.
ADA Convention, Jan. 26-29, 1956, Coronado, Calif.

COLUMBIAN STEEL TANK COMPANY
P. O. Box 4048R . . . Kansas City, Mo.

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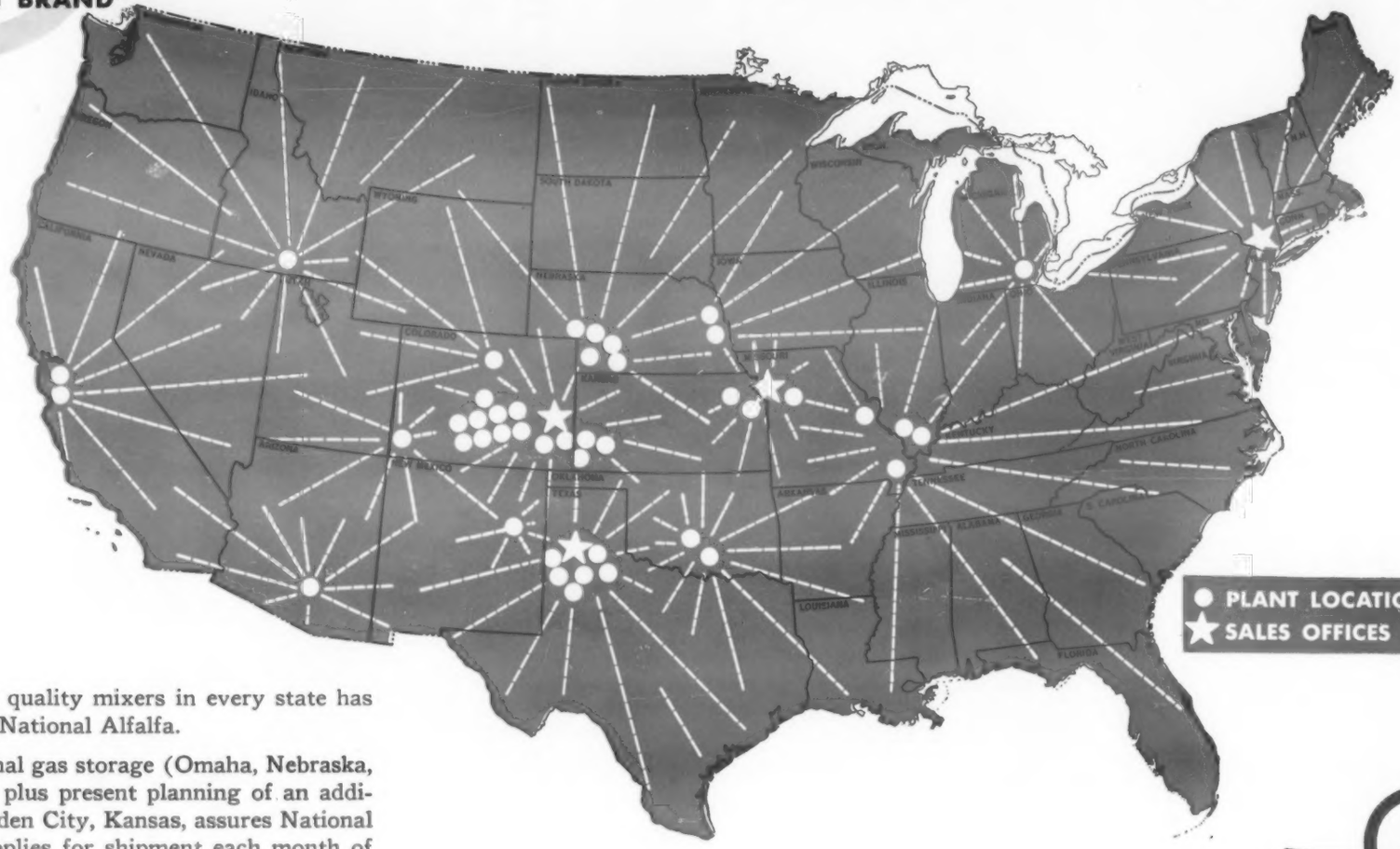
NATIONAL ALFALFA

"JACK RABBIT BRAND"

Popular in Every State



Filling the needs of quality mixers in every state has long been the history of National Alfalfa.

50,000 tons of terminal gas storage (Omaha, Nebraska, and Lawrence, Kansas) plus present planning of an additional 18,000 tons at Garden City, Kansas, assures National of "in-hand" quality supplies for shipment each month of the year.

This storage is filled from a portion of National's own high quality production which exceeds 150,000 tons annually. National is truly the nation's foremost Alfalfa dehydrator.

TO BETTER SERVE THE FEED INDUSTRY

NATIONAL ALFALFA DEHYDRATING AND MILLING COMPANY

ACROSS THE LAND

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FEEDSTUFFS
A WEEKLY NEWSPAPER
FOR THE FEED MANUFACTURER, MIXER, BROKER and DEALER

ADA OFFICERS—The 1955 official family of the American Dehydrators Assn. is shown above, left to right: President, Raymond E. Bert, Bert & Wetta, Maize, Kansas; first vice president, Kenneth Morrison, Morrison & Quirk, Hastings, Neb.; executive vice president, Joseph Chrisman, Kansas City; second vice president, W. A. Donnelly, National Alfalfa Dehydrating & Milling Co., Lawrence, Kansas.

ADA Convenes Jan. 25 in Coronado, Cal.

CORONADO, CAL. — How to increase dehydrated alfalfa sales and other industry problems will receive attention along with the general future of agriculture when the American Dehydrators Assn. opens its annual convention here Jan. 25.

The Hotel del Coronado in sunny southern California is the site for the meeting this year. And, as in past years, plenty of time has been set aside for recreation and entertainment—in Coronado and nearby Tijuana, Mexico.

Convention speakers will include several West Coast leaders in business and research, in addition to representatives from the feed industry and agricultural experiment stations.

Presiding at the directors' session Jan. 25 will be Raymond E. Bert, Bert & Wetta, Maize, Kansas, head of the association. Joseph Chrisman, executive vice president of ADA, will report on the activities of the ADA office.

Current directors of the association are:

Mr. Bert; J. A. Alexander, Grayson Alfalfa Dehydrating Mills, Sherman, Texas; Ralph Beerman, Beerman Brothers Dehy, Dakota City, Neb.; Vernon C. Britton, V. C. Britton Co., Firebaugh, Cal.; John Caple,

(Continued on page 28a)

Dehydrating Industry Increases Inert Gas Storage Capacity by 40,000 Tons

For the second successive year the alfalfa dehydrating industry added nearly 40,000 tons to its inert gas storage capacity, figures compiled by the American Dehydrators Assn. reveal.

Total gas storage capacity in the industry Jan. 1, 1956, is estimated at 205,600 tons, compared with 169,230 tons a year ago and 120,910 tons two years ago. In 1953, there existed facilities for only 7,000 tons of this kind of storage.

Joseph Chrisman, executive vice president, American Dehydrators Assn., estimates that these facilities will permit the handling of about 310,000 tons of top quality dehydrated alfalfa meal each year. This is based on an estimate that the space will be filled and emptied once and one half times during a crop year, as a conservative average.

This quality meal will blend out with lesser quality meal on a basis

(Continued on page 28a)

Dehydrated Alfalfa Meal Production Up 11% Over Year Ago

WASHINGTON — U.S. production of dehydrated alfalfa meal for the April-November, 1955, season is up more than 11% over that for the corresponding period in 1954, according to U.S. Department of Agriculture figures.

Production for the 1955 April-November season totaled 1,088,200 tons compared with 977,700 tons a year earlier. In 1953 this total was 788,300 tons.

(Continued on page 28a)

AMERICAN DEHYDRATORS ASSOCIATION CONVENTION SCHEDULE

Hotel del Coronado, Coronado, California

Wednesday, Jan. 25

10:00 a.m.—Board of directors meeting, Palm Room.
10:00 a.m.—Research Council meeting, Patio Room
12:30 p.m.—Board and council luncheon, Terrace Room.
2:00 p.m.—Board and council reconvene, Patio and Palm Rooms.

Thursday, Jan. 26

8:30 a.m.—Registration, Lobby.
9:00 a.m.—Mixed golf tournament, Tijuana Country Club.
10:00 a.m.—Tour of Balboa Park, board bus at hotel.
2:00 p.m.—Harbor excursion, boat at hotel dock.
6:00 p.m.—Circus party, Circus Room.

Friday, Jan. 27

8:30 a.m.—Registration, Lobby.
10:00 a.m.—Call to order, Coronet Room. Invocation by the Rev. Kenneth B. Carson, Grand Memorial Presbyterian Church, Coronado; president's address by Raymond E. Bert; election of new directors; "The Race Between Population and Food Supply," by Dr. Varden Fuller, University of California; "Tomorrow Unlimited," by E. G. Cherbonnier, feed consultant for the Grain & Feed Dealers National Assn.
11:30 a.m.—Adjourn for lunch.
11:40 a.m.—New board of directors meeting, Palm Room.
12:30 p.m.—New president's luncheon featuring California fashions, Crown Room.
2:00 p.m.—Convention re-assembles, Coronet Room. Dr. W. M. Beeson, Purdue University, will talk on dehydrated alfalfa in cattle, sheep and swine rations; Dr. H. T. Reynolds, University of California, will discuss the spotted alfalfa aphid.
3:15 p.m.—Board of directors meeting, Palm Room.
7:30 p.m.—Jai alai games, Fronten Palacie, Tijuana.

Saturday, Jan. 28

10:00 a.m.—Convention assembles, Coronet Room. Jesse Tapp, Bank of America board chairman, will speak on the economic outlook in relation to the agricultural situation; John K. Westberg, International Minerals & Chemical Corp., will discuss good salesmanship; Joseph Chrisman, executive vice president of the ADA, will talk.
12:30 p.m.—Ladies' luncheon featuring floral demonstrations, Terrace Room.
2:00 p.m.—Convention re-assembles, Coronet Room. A four-part panel discussion will be as follows: "Selling at the End of the Line," led by R. E. Bert; "Improving the Product," Ralph Beerman; "Need for Gas Storage Facilities," Pickens West; "Costs and a Shorter Work Week," L. J. Schiller.
6:30 p.m.—Dinner in Crown Room. Dancing and entertainment.

SPECIAL ALFALFA SECTION

Let's Produce Better Alfalfa

By Joseph Chrisman

Executive Vice President, American Dehydrators Association, Kansas City

Joseph Chrisman

The standardization of grades of dehydrated alfalfa in the market place has been based primarily on the ability of the dehydrator to produce given qualities, as well as need of the nutritionist in formulating his feeds. A limiting factor, then, has been the inability, or hesitancy, of the dehydrator to raise the protein, or carotene, content of the standard grades or to lower their fiber content.

A part of this hesitancy to upgrade has been due to doubts and fears that such improvements as might be made could not be sustained. The dehydrator's first thought has been that the only possibility of getting a higher grade product for any particular use would be through mechanical means. Sifting had been practiced extensively in the mills at an early date and still is, to some extent. This is done to bring a portion of the meal up to 17% protein when operating on a borderline quality, such as 15% or 16% protein. In doing this he was always plagued with the problem of disposing of the lower grade fraction which was produced in the process.

Generally speaking, in the big producing area of the Midwest, the average quality of all meal produced in a season, with respect to protein, lies somewhere between 17% and 18% protein. Also generally speaking, the other nutrients of value can be directly correlated with the protein content in the freshly produced material. As protein is increased the others are there in increased amounts, while fiber content decreases.

In some areas, particularly those where irrigation is a normal practice, average quality is often maintained at higher levels than the 17 to 18% protein mentioned for the Midwest. There are several reasons for this. In the first place, those areas where irrigation is a regular and necessary adjunct to growing crops, two important factors exert considerable impact on the grower. First, in such areas the use of fertilizers is usually a "must" and the utilization of the full value of the fertilizers is more nearly assured. So, there is not quite the risk involved in using copious quantities.

In an area depending on rainfall as the only source of moisture, the application of chemical fertilizers—lime, phosphate, potash or nitrogen—involves risks. If the application has been one of top dressing and a huge downpour occurs shortly after application, there will be considerable loss through runoff of surface water. If the application is followed by an extended drouth the returns of the investment will, at best, be indefinitely postponed and in the case of some fertilizers, pretty well lost.

A good way to avoid some of the risk is to apply the lime and phosphate in sufficient amount to last the expected life of the stand before even seeding to alfalfa, disking it well into the top 6 or 8 in. of the soil. That puts money into the soil bank that is not readily dissipated through nonproductive channels. However, it does necessitate a very large expenditure in one year with returns to be spread over several years.

The second big advantage in the irrigated areas lies in the uniformity of growth of the plants after water is applied. It means that the dehydrator can set up a schedule of cutting at rather specific time intervals. He has a great deal more assurance that he can maintain that time schedule and cut the plants at the proper stage of growth, providing he also maintains his watering schedule.

Cutting Schedule Problems

In the non-irrigated fields of the Midwest, however, a field may be harvested today with best intentions to get back to it in 30 days. On the 30th day a rainy period may start which lasts for a week. Then, by the time the field will again support harvesting equipment the alfalfa may be so far advanced in stage of growth that quality is seriously reduced.

The reverse condition might occur after the original cutting. Soil moisture may be greatly depleted and a long period of no rainfall will result in little or no regrowth. Perhaps the whole area, maybe 600 or 800 acres, has been harvested with a thought of a cutting rotation of 25 or 30 days, but at the end of the period there may not be a single field ready for the next cutting. When the rains do set in, all fields start recovering at once and an entirely new cutting schedule must be established. It is almost certain that the last field in that deyhdrator's cutting schedule will have advanced in growth to the point where it is much inferior to his first field.

In either of these two cases, the best procedure to follow, from a quality production standpoint, would be to convert some of the stands to suncured hay. Note that I say, "From a quality production standpoint," which is the thesis we are working on. We fully realize some of the farmer relations problems and some of the economic inconveniences and losses which may be involved. In spite of the many difficulties which may be

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experienced there are still great possibilities for working general improvements in the quality of dehydrated alfalfa.

Research

The U.S. Department of Agriculture, through its Agricultural Research Service, is constantly working on new and better varieties of alfalfa. The USDA program is designed to study the basic principles in alfalfa that affect the breeding behavior of the crop, disease and insect resistance, cold and drouth tolerance, forage yield of quality, seed production, growth response, and stand persistence, in crown and root spreading and pasture types.

At the Alfalfa Research Field Day, held at Lincoln, Neb., the past summer the value of Range alfalfa and similar wilt-resistant varieties was said to be a good example of the practical benefits of this kind of research. These wilt-resistant varieties developed cooperatively by federal and state workers have a current farm value each year of approximately 60 times the total cost of alfalfa research during the last 20 years.

USDA is working on the weed control problem in spring seeded alfalfa and has made a great deal of progress along that line, indicating that effective control of such weeds as green and yellow foxtail, for instance, is possible in new seedings. Control of grass infestation in alfalfa fields can do a great deal to upgrade the product.

It is interesting to note that the new wilt-resistant varieties, which have been introduced in the last few years, such as Buffalo and Ranger, over a five-year period have shown consistently higher yields per acre and much better stand at the end of the five-year period.

In California a great deal of this work has been done, directed primarily toward breeding for disease and insect resistance. Researchers have felt this approach would give them the most rapid improvement in productivity and quality. As an example, breeding for leaf spot resistance has given better quality hay on spring cuttings when leaf spot was severe. Analyses of samples taken from plots under heavy infection are given in the following table:

SEVERE LEAF SPOT INFECTION

	% Leaves	% Protein	Carotene p.p.m.
California Common	38	12.9	96
Caliverde	51	18.4	204

Paying proper attention to the new varieties of alfalfa for use in dehydration can give a good return in increased yield as well as higher quality. Whenever insects attack an alfalfa field the quality is bound to suffer.

A report on insect control in fields around Lawrence, Kansas, was published this year in the American Dehydrators Association Research News. In one plot which was top dressed with Toxaphene granules in the spring and given an application of Toxaphene spray about three weeks in advance of each cutting during the 1954 growing season, the plot averaged 1.02 tons per acre more than the control plot, the protein averaged 3/10% higher and the vitamin A was about 12,000 IU Vitamin A per pound higher.

The return to the farmer in the case of this plot was $14.75 per acre more than the control. This was because the company which harvested that particular field pays the farmer on a protein basis, in order to encourage production of higher-quality alfalfa.

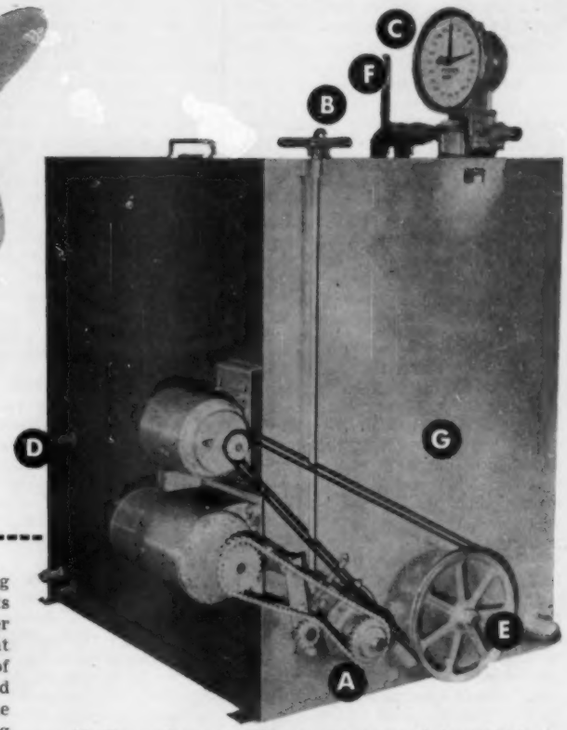
Fertilization

A better fertilization program for alfalfa could do a great deal to upgrade the product. An example of this is reported by Marvin Rohloff of Ohio. His yield per acre was increased by 6.8% while his yield of total protein was increased 30.8%. It is almost always true that where an increase in quality is observed there

Another WENGER 1st!

NEW WENGER ANIMAL FAT FEEDER

Mix Animal Fat and Alfalfa Meal Uniformly at Hammermill or Pellet Mill



Here's the equipment to end all your alfalfa oiling problems. Whether you desire to mix oils or fats at your hammermill or in the tempering chamber of your pellet mill, the new Wenger Series 100 Fat Feeder assures complete uniformity of delivery of fats or oils, with pin-point control of fat flow, and with automatic temperature control. If you are one of the many who has experienced an uneven mixing of fat in your dehydrated alfalfa meal—here is your answer to the need for dustless, uniformly oiled meal. With the 100 Series you may inject fats directly into the hammermill, or, if you pellet alfalfa meal, directly into the tempering chamber of your pellet mill. No clogging, no uneven rate of delivery, no control valves to stick with the Wenger Meter Flow Fat Pump.

No Brass, Bronze or Copper ever comes into contact with the animal fats added through the special Meonite pump. Therefore the stabilizing agent is not affected and the problem of copper-toxicity in the feed is eliminated.

Cut cost of pelleting by blending animal fats which lubricate the dies, reducing wear and replacement to a fraction! Your pellets actually cost less with animal fats added!

HERE'S HOW WENGER FAT FEEDER SOLVES YOUR PROBLEMS!

A **Famed Wenger Proportioning pump** built into tank for automatic heating . . . Cast Meonite construction to eliminate copper toxicity and maintain stabilizer effectiveness . . . pumps from 1 lb. to 75 lbs. per minute without flow variation . . . cannot clog or become obstructed by scum or fat particles!

B **Exclusive Wenger Pump Control**—does what no valve can do—feed any volume without clogging. Simple dial setting accurately regulates the flow. No restrictions or valves in fat flow line.

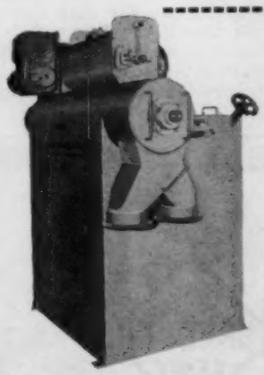
C **Special Liquid Fat Meter**—10" face . . . dual setback hands . . . recording 6-figure totaling device . . . calibrated in lbs. of fat.

D **Steam Temperature Controls**—Fully adjustable for 125° to 175°—the perfect temperature for liquid fat feeding . . . iron heating coils . . . thermometer and automatic thermostat.

E **Special Built-in Agitator**—keeps liquid fats uniform . . . driven by 1½ h.p. TEFC motor.

F **By-Pass Valve**—permits recirculating fat without shutting down unit.

G **400 Gallon Tank**—provides constant supply to your pellet mill or mixer.



MIX UP TO 9 TONS OF PERFECTLY DUSTLESS MEAL PER HOUR WITH THE NEW WENGER 750 SERIES FAT MIXER

For fast, efficient fat mixing there's nothing that can touch the new Wenger 750 Series Hi-Speed Fat Mixer. Has all the special fat metering and pumping features of the Series 100 Fat Feeder—cast Meonite pump, special agitator, automatic temperature controls, liquid fat mixer, PLUS the finest high speed mixer ever produced.

Series 750 Fat Mixer can be used as either a fat or molasses mixer. Build up your own molasses feed business in off-season periods. MAKE YOUR BUSINESS A YEAR AROUND BUSINESS.

CAROTENE STABILIZERS? These fat and oil soluble stabilizers are said to vastly retard carotene deterioration. Both the 100 Series Fat Feeder and the 750 Series Fat Mixers have built-in fat agitators to assure you of an even, uniform mixture of these oil soluble stabilizers in your fats or vegetable oils.

For Perfectly Dustless Meal—For Perfect Moisture Conditioning—For Alfalfa Meal Which Is Uniformly Oiled and Conditioned—Look to WENGER.

MOISTURE CONTROL PROBLEM?

The Wenger 750 Series can be used as a moisture conditioner, applying both fats and moisture simultaneously, with complete uniformity of liquid distribution through every particle of your alfalfa meal.

For year around success—for dustless, perfectly oiled meal — for uniform moisture conditioning—and for year around stability of your operation—investigate the Wenger 750 Series Fat Mixer.

SMALLER MODELS ALSO AVAILABLE

Write Today for Wenger's Suggested Fat-Molasses Installation for Year Around Success.

Wenger Mixer Mfg. Co.

SABETHA, KANSAS

will likewise be an increase in total yield, whenever the increase is caused by insect control or proper fertilization.

It has been shown numerous times that both an increase in yield and an increase in quality can be attained by use of trace minerals where they have been in insufficient supply. The same is true, also, of the use of sulphur on sulphur deficient soils. The use of nitrogen on straight legume fields has not been generally recommended. However, it is not an uncommon practice to use some nitrogen on new stands and in most instances this has proved beneficial.

Stage of Growth

Recent work completed at the University of California, and which was partially supported by a grant made from the American Dehydrators Assn., has shown that the greatest decrease of nutritive value would be between 50% bud and 10% bloom after which the decrease is more gradual. Researchers have found that nothing is to be gained from allowing alfalfa to mature past the 10% bloom from the standpoint of total yield over the season. It merely increases the days in the cutting interval and prevents the possibility of additional cuttings of alfalfa. They state that one should expect about the same yield over a season from alfalfa cut at 10% bloom, as at full bloom.

The California workers go on to state that other work in progress indicates that cuttings in the bud stage might be made and stand vigor maintained, if some of the other cuttings are allowed to go to early bloom stages. Their method of determining bloom stage is not the same as that used by most dehydrators because they make hand counts of the stems and any stem with a single blossom was considered to be in bloom. Consequently, 10% bloom means that 10% of the stems have at least one blossom. This is much less mature than a field which has the appearance of 10% of the area in bloom. Generally most farmers are cutting alfalfa between 30 and 60% bloom. The California experiments show a drop in protein content between the 62% bud stage and the 11% bloom stage of 3.9%, dropping from 25.2 to 21.3% protein. The tests likewise show a change in crude fiber content from 21.7 at the 62% bud stage to 27.3 at the 11% bloom. There is little doubt that that manipulation of the cutting schedule to allow a shorter period between cuttings could do a great deal toward upgrading the product.

Summary

In summary, we would say that choice of good varieties for the area in which the dehydrator is operating, with particular regard to disease resistance, good soil properly fertilized, insect control, and shortening of the cutting interval would all do much to give a better supply of alfalfa at the mill.

Proper operation of the dehydrator at the mill with more attention paid to the quality of the material coming out of it and with perhaps a minimum of sifting, we believe, could result in a greatly improved product for the formula feed manufacturer.

Good varieties of the disease resistant nature are probably the best insurance for stand longevity there is and a healthy plant will almost invariably have a higher protein and carotene content than a diseased plant. Good soil bed preparation and proper fertilization are of paramount importance if quality and yield are to be maintained or increased. A grower should learn in what the soil is deficient through chemical analyses and experimentation and then feed it liberally so that it, in turn, can feed the plant.

Insects can do a great deal of damage to any stand and they are particularly bad on the leafy material which is the stronghold of the protein and carotene. Hence, insect control is quite important in maintaining or upgrading the quality of the dehydrated alfalfa to say nothing of lengthening the life of the stand and increasing the yield.

Shortening the cutting interval is, of course, beset with many hazards and troubles but it can be done and will pay off in higher quality material in the long run without, we believe, any great reduction in total tons per acre per year, though it may result in the cutting of fewer acres and hence slightly less tonnage through the dehydrating unit.

With the great possibility of using a 15 to 17% dehydrated alfalfa in the ruminant field where it is of great value, it would seem that another product of higher grade, perhaps from 17% to 20% protein, might be had on an economically sound basis for those animals which cannot use the fiber content.

Alfalfa Said to Boost Winter Gains of Cattle

FT. COLLINS, COLO.—Cattlemen can increase beef gains and lower costs of gains by adding alfalfa to the winter range feed provided their cattle.

These benefits, Colorado A&M researchers say, can be expected if alfalfa makes up approximately 35% of the supplements fed. The alfalfa can be fed as hay or as dehydrated alfalfa. Either form will boost gains, regardless of whether a high protein or low protein ration is being fed, according to tests being made at the Eastern Colorado Range Station.

Ford Daugherty, associate animal husbandman for the Colorado A&M Experiment Station, believes these benefits can be traced to certain unidentified factors known to be in alfalfa and to the carotene contained in the legume.

Mr. Daugherty has noted other special effects from alfalfa supplementation, including a carryover of nutritional benefits from cow to calf. More calves have survived at the range station if their mothers were fed alfalfa. These calves also have had higher weaning weights than those from cows that received no alfalfa. The advantage in weaning weights has amounted to as much as 15 to 20 lb. in favor of the calves from cows fed alfalfa, he said.

Larger Alfalfa Output May Soon Seek Markets

ITHACA, N.Y.—Improved alfalfa varieties, bred for special adaptation, and dependable certified seed supplies are largely responsible for making it possible for the U.S. farmer to about double his usage of alfalfa seed in the past 10 years, according to A. A. Johnson, professor of plant breeding, Cornell University. Much of this change has taken place in the past five years, and the full impact on acreage and alfalfa forage production is still to be felt, he pointed out in a talk delivered before the Cornell Nutrition Conference for Feed Manufacturers last fall.

Increased Plantings

There is evidence, he continued, that most of this increased usage of alfalfa seed has occurred from the states in the Missouri and Mississippi valleys and east—particularly in the northern states. The Northeast has participated in this increase. Some acres diverted from price support crops have undoubtedly been planted to improved alfalfas.

"Large tonnages of this added alfalfa production will soon probably be seeking markets either as cash hay or in alfalfa dehydrating operations," he predicted.

Relocation of Sources Possible

He also said that he could see that some relocations of sources of alfalfa supplies and the nutritive values of alfalfa grown in different sections of the country are possible.

Localizing his remarks, Prof. Johnson told the feed manufacturers that new, better adapted alfalfa varieties and dependable certified seed supplies have been responsible for a 70-75% increase in the planting of alfalfa in New York State.

"New Cornell research shows that some of these varieties under good fertilization and liming can be harvested three times during the season—each cutting is made in very early bloom. This produces very high yields and top quality hay or silage," he stated.

Aid for Alfalfa Seed Industry Urged

OGDEN, UTAH—Rep. Henry Aldous Dixon (R., Utah), said he had requested Ezra Taft Benson, Secretary of Agriculture, to acknowledge the alfalfa seed industry as a critical industry.

"I have asked that steps be taken to provide a loan or set-aside for alfalfa seed of approximately 25¢ lb.," he said. He said he favored the loan arrangement to the actual set-aside because in his opinion should seed rise in the spring, the farmer will get the benefit of the increase and at the same time be assured of the 25¢ lb.

"That amount is low enough to restrict overproduction in other areas and at the same time permit Utah seed growers to live," he said. He added that the seed is selling at 16¢ lb. which gives the producer only 42% of parity.

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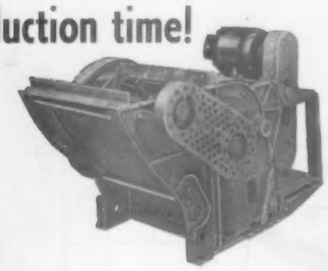

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Unidentified Factors in Alfalfa and Grasses

By Dr. S. J. Slinger

Ontario Agricultural College, Guelph, Canada

EDITOR'S NOTE: In this discussion of unidentified factors, Dr. Slinger cites four experiments which have shown that grass and alfalfa contain an unknown factor necessary for egg production and hatchability in chickens. These factors, Dr. Slinger says, appear to be distinct from the unidentified factors present in fish meal, fish solubles, liver meal, dried whey, distillers' dried solubles and certain fermentation products. The activity of the alfalfa and grass factors would not appear to be related to the estrogenic activity of green plants, the author states.

From the point of view of the formula feed industry it is of considerable importance to know the physiological functions, sources of supply and requirements of the unidentified nutrients.

Evidence for the existence of an unknown factor is usually obtained by observing the prevention or remission of abnormal symptoms, including suboptimal growth and reproductive performance, upon the inclusion of a source of the factor in a diet adequate with respect to all known nutrients. Small animal species such as the chick, the guinea pig and the rat have proven extremely useful in the early work leading to the discovery of new factors.

However, in the final analysis the feed manufacturer requires direct evidence based upon work with all of the domestic animals fed for various productive purposes.

An attempt will be made in this article to review briefly the early work pertaining to the discovery of the unknown factor activity in green forages for various species. The more recent work with domestic animals will be discussed in greater detail.

UNIDENTIFIED FACTOR(S) IN FORAGE JUICE—Kohler, Elvehjem and Hart (1936) reported that grass juice contained an unknown factor necessary for the normal growth of rats fed mineralized milk produced by cows fed winter rations. Milk produced while cows were on good pasture was a good source of the water soluble "grass juice factor." Kohler and co-workers (1938) found the "grass juice factor" to be of importance in the nutrition of the guinea pig, a finding which was confirmed by Cannon and Emerson (1939).

Using the guinea pig as the experimental animal, Randall, Sober and Kohler (1940) determined the distribution of the "grass juice factor" in various plant and animal materials. In addition to cereal grasses they found young white clover, peas, pea shells, cabbage, turnip tops and spinach to be excellent sources. Rice bran, brewers' yeast and wheat germ were found to be fair sources. Animal materials including liver contained only small quantities. The amount of the factor present in grass varied with the age of the plant, a high concentration being present in the young growing plant and the concentration becoming considerably less in mature and old plants.

M. L. Scott (1951a) presented evidence that the turkey poult requires an unknown factor present in grass and alfalfa juice. Dehydrated grass contained little or none of the factor. The similarity in distribution and properties of the factor required by the turkey with those of the "grass juice factor" required by rats and guinea pigs suggested to the author that these factors were identical.

Kohler and Graham (1951) reported that hatchery chicks fed practical type diets required an unidentified factor present in the press juice of forage crops. Materials having some "grass juice factor" activity included certain liver and yeast preparations.

The factor was largely, but not entirely, destroyed by drying and dehydration of the whole plant materials. Stability studies on the juice concentrate indicated that the growth promoting activity is stable during storage at room temperature for six months if precautions are taken to inhibit microbial growth.

Kohler and Graham (1952) presented evidence indicating that the chick growth factor present in grass juice is transmitted to the baby chick from the hen. Chicks hatched from hens not on pasture showed a greater response to the factor than chicks hatched from hens having access to good range. Based on a similar carryover effect shown in earlier work with rats and guinea pigs, the authors are of the opinion that the chick growth factor may be the same as the "grass juice factor."

Effect of Antibiotics

Under certain conditions, antibiotics appear to exert a sparing effect on the requirement for the factor(s) present in grass juice. M. L. Scott (1951b) reported that aureomycin reduced the requirement of the turkey poult for this factor.

This was confirmed for the poult by Slinger et al. (1952) using penicillin as the antibiotic and was extended to include goslings (Slinger et al. 1953). In addition, Hill et al. (1953) reported that alfalfa juice and crude casein stimulate the growth of chicks fed diets adequate in known nutrients. In the presence of either alfalfa juice or crude casein the growth response to aureomycin was decreased or eliminated.

Anderson et al. (1954) found that certain antibiotic-resistant strains of E. coli supplied grass juice factor

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activity when fed to poults. Since it is known that antibiotic feeding results in the emergence of resistant strains of E. coli in the intestinal tract, it may be that the sparing effect of antibiotics on the requirement of the factor present in grass juice is explained on the basis of the development of coliform strains capable of synthesizing the factor.

Evidence of Need

In spite of evidence for a sparing effect of antibiotics on the requirement of the factor(s) in grass and alfalfa, under certain conditions, there are many reports indicating a need for this factor(s) in the presence of antibiotics. For example, H. M. Scott and associates (1951) obtained no growth response when grass juice was added to a practical diet in the absence of aureomycin but a definite response occurred in the presence of the antibiotic.

In addition, Kohler and Graham (1951) observed that the response of chicks to grass juice was not diminished by the presence of dietary aureomycin. Hansen and co-workers (1953) obtained significant chick growth responses to both a forage juice concentrate and to dehydrated alfalfa and dehydrated cereal grass in the presence of aureomycin. Also, M. L. Scott and associates (1954) reported that in three experiments with chicks fed a purified diet, grass juice produced a marked growth-promoting effect while aureomycin exerted little or no influence.

Hill et al. (1953) found that when glucose was used as the major carbohydrate source in a chick diet, neither alfalfa juice nor aureomycin alone gave a response while a combination of the two did increase chick growth.

Slinger et al. (1954) reported that the inclusion of a forage juice concentrate in a turkey breeder basal diet resulted in a slight improvement in hatchability both in the presence and absence of penicillin. The antibiotic caused a moderate increase in hatchability when used alone and the combination of forage juice and penicillin gave hatchability which was superior to that with any other treatment.

Carry-Over Effect

To determine the possible carry-over effect of penicillin and forage juice from hens to poults, newly hatched poults from hens receiving forage juice, penicillin and a combination of these supplements, were fed a practical turkey starter and this diet plus either penicillin, forage juice or both these materials.

Regardless of the treatment accorded the dams, a marked improvement in growth resulted from supplementing the poult basal diet with either penicillin or forage juice. The combination of penicillin and forage juice in the poult diet resulted in greater growth than either supplement used singly only when the hens received penicillin. Furthermore, in

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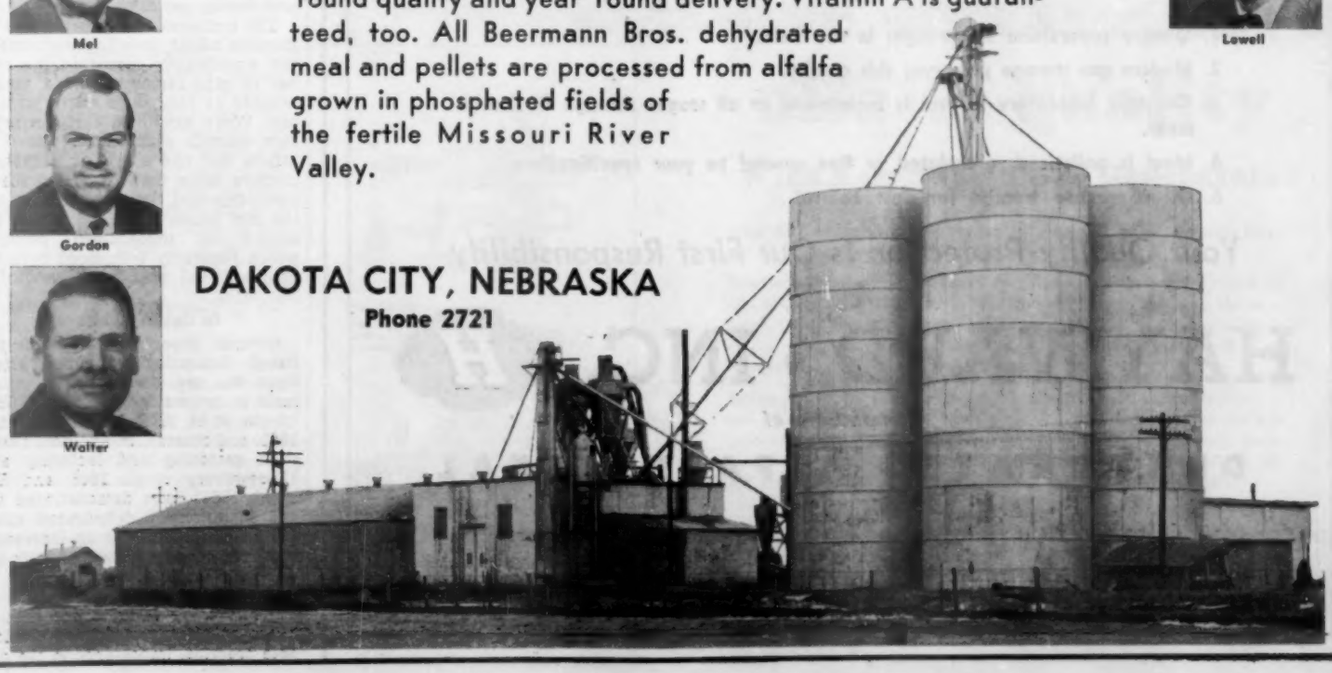

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the absence of forage juice in the breeder diet, poults hatched from hens fed penicillin grew more rapidly than those hatched from hens not receiving the drug only when the poult diet contained both penicillin and forage juice.

With ten diets containing forage juice, supplementary penicillin in the hen diet caused the poults to grow somewhat more rapidly, regardless of the poult diet. However, both penicillin and forage juice were required by the poults for maximum growth.

It would appear that failure of forage juice to give a growth response in poults in the presence of an antibiotic is due to the poults being deficient in some factor(s) which can be supplied by supplementing the breeder diet with penicillin. Also, the lack of carry-over effect due to penicillin in the hen diet appears to be due to a deficiency in the poult diet of the factor(s) present in forage juice.

Antibiotic and Factor Needed

To obtain maximum hatchability from the breeding flock together with maximum growth of the poults it is necessary to include both an antibiotic and a source of the factor(s) in grass juice in both breeding and starting diets for turkeys.

Wahlstrom (1951) reported that 3% of grass juice concentrate significantly increased growth in pigs fed an alpha-protein baby pig diet. In studies conducted by Gard et al. (1955), grass juice concentrate produced a growth response in pigs fed complete diets, suggesting that grass juice may contain an unidentified factor(s) required by the pig.

UNIDENTIFIED FACTOR(S) IN DEHYDRATED ALFALFA AND GRASSES — Spitzer and Phillips (1936) observed that supplementing a corn-soybean diet containing 5% alfalfa meal with an additional 10% alfalfa meal increased the percentage of rats weaned. Bowland et al. (1948), using a purified diet, obtained evidence that dehydrated alfalfa meal contains an unidentified growth factor(s) for the rat; also 15% alfalfa meal improved the ability of females to wean their young.

Hansen et al. (1953) reported stimulation of chick growth when either dehydrated or sun-cured alfalfa was added to a purified diet containing all known nutrients. Dehydrated alfalfa meal, at a level of 10 to 20%, gave a response comparable to that elicited by 5% of a forage juice concentrate. The factor(s) was more concentrated in sun-cured meal than in dehydrated meal.

In one study a direct comparison was made between dehydrated cereal grass, sun-cured alfalfa and forage juice concentrate. The responses to 5% cereal grass or sun-cured alfalfa were comparable to that from 5% forage juice concentrate. The forage juice was superior to the cereal grass but not significantly so, and a combination of forage juice and cereal grass gave no better growth than the forage juice alone.

Studies in our laboratory (Anderson et al., 1954) showed that 5% dehydrated cereal grass gave a response in turkey poults comparable to that obtained with 5% forage juice concentrate. These results constitute evidence that the factor(s) in grass juice is identical to that supplied by dehydrated green materials.

Unidentified Factor for Chicks

Vavich and associates (1953) concluded that dehydrated alfalfa meal contained an unidentified chick growth factor(s). The growth stimulating property could not be consistently demonstrated with a similar basal diet and the same sample of alfalfa. The authors suggest a difference in the initial storage of the factor(s) in chicks from different hatches as a possible explanation for this. On the other hand, a deficiency of some other factor necessary for maximum growth potential in the chicks might have been involved.

Experiments conducted by Nestler et al. (1936), Gish and Payne (1940), Cravens et al. (1942) and Hunt and Stuart (1944) have shown that grass and alfalfa contain an unknown factor(s) necessary for egg production and hatchability in chickens. Jacobs and co-workers (1953) presented evidence for the existence in dehydrated alfalfa meal of a factor(s) necessary for both hatchability and fertility in chickens.

Sow Reproduction Improvement

Factors supplied by alfalfa have been shown to improve the reproductive performance of sows fed in dry lot (Freeman, 1938; Hogan and Johnson, 1941; Ross et al. 1944; and Cunha et al. 1944). More recently, Fairbanks and associates (1945), using a practical diet, and Ensminger et al. (1951) with a purified diet, also demonstrated that alfalfa meal had a favorable effect upon gestation and lactation performance of sows.

Heidebrecht et al. (1949) observed that the average number of pigs weaned increased slightly when alfalfa meal and fish solubles were added to a practical diet. In addition, Gard et al. (1955) noted that the addition of 10% dehydrated alfalfa meal to purified sow diets, adequate in known nutrients, did not influence litter weaning weight. However, 88% of the alfalfa-fed sows weaned litters as compared with 55% of the sows fed the control diets.

After the sows had been on diets 233 days, 29% fewer services per conception were required by alfalfa-fed sows although after 448 days there was no difference in ovulatory rate or number of abnormalities of the reproductive tract between the two groups.

In other recent studies, Teague (1955) observed the comparative reproductive performance of gilts when a diet containing 18% sun-cured alfalfa or a well supplemented legume-free diet was fed prior to breeding and during gestation.

The inclusion of alfalfa did not noticeably affect breeding performance but significantly increased the number of pigs farrowed and a greater number of pigs survived to weaning age. When examined early in gestation, animals which had received the alfalfa diet had a greater number of corpura lutea than those fed the legume-free diet. The data suggest that the diet which contained alfalfa furnished an unidentified factor(s) which favorably influenced ovulation rate and the post-natal survival of the litter.

In Cattle and Sheep

Several reports have been published indicating beneficial effects from the use of dehydrated alfalfa meal in rations for beef cattle (Burroughs et al. 1950, Klosterman et al. 1953, and others). In addition, studies with gestating and lactating ewes (Shrewsbury et al. 1946, and Stitt et al. 1954) have demonstrated that the inclusion of dehydrated alfalfa in the diet results in an increase in wool clip, a stimulation of milk production, and an increase in the growth rate of the lambs.

While there is no doubt that dehydrated alfalfa meal is of considerable practical importance in the diets

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of cattle and sheep, many of the benefits have no doubt been due to the presence of recognized nutrients present in dehydrated alfalfa.

DIFFERENTIATION BY DOMESTIC ANIMALS OF UNIDENTIFIED FACTOR(S) IN GREEN FORAGES AND OTHER KNOWN AND UNKNOWN FACTORS—Nestler and associates (1936) reported that an unknown factor necessary for hatchability in chickens was abundant in green grass and dried pork liver. Meat meal, fish meal and dried buttermilk apparently contained some of the factor but dried whey was a poor source.

Kohler and Graham (1950) observed that the chick growth factor present in forage juice was not identical with vitamin B_{12} or vitamin B_{13}. Nor could the activity be ascribed to factors present in fish solubles, fish meal, dried whey, dried distillers solubles or a molasses fermentation solubles product.

Fisher et al. (1954) presented evidence to indicate that alfalfa meal, defatted whole liver and dried whey each contributes separate and distinct unidentified chick growth factors which are additive in their action.

Three Factors

Combs et al. (1954) showed that at least three different unidentified factors are required for the rapid growth of chicks. One of these, the "liver factor," is supplied by condensed fish solubles, liver and a grain fermentation solubles product. Another, the "whey factor" is present in dried whey products, dried molasses distillers solubles, dried brewers yeast and certain fermentation products. The third, the "alfalfa factor" is found in dehydrated alfalfa meal and dried brewers yeast.

Hansen et al. (1953) found it more difficult to demonstrate that alfalfa meal will stimulate chick growth on a practical than on a synthetic diet and suggested that the factor(s) present in alfalfa meal may also be present in certain natural feed ingredients. On the other hand, since growth inhibition due to alfalfa could be more readily demonstrated on natural than on synthetic diets, perhaps the difficulty in showing growth stimulation on natural diets was partly due to antagonism between the unidentified growth factor(s) present in alfalfa and the growth depressing factor(s) known to be present in both alfalfa and other natural feed ingredients.

Work in our laboratory has shown that the turkey poult is a much better experimental animal for work on the unidentified factor(s) in alfalfa and grasses than is the chick. The requirement of the poult for the factor(s) is apparently sufficiently high to permit a consistent response even on practical diets.

All Factors Needed

Additional evidence in this connection (M. L. Scott et al. 1954) showed that fish solubles, dried distillers solubles and grass juice each contains distinct unidentified growth factors for the chick. The sample of dried whey used in this work appeared to contain more than one factor and was apparently a fairly rich source of the factor present in grass juice. No single factor was found capable of producing a large growth response unless added to a diet containing the other unidentified factors.

March et al. (1955) reported the presence of separate unidentified chick growth factors in dehydrated green feed (alfalfa and cereal grass meals) and herring fish meal. Also, the response to either of these factors appeared to be dependent upon the presence of the other in the ration.

Peterson et al. (1955) presented evidence indicating that the unidentified factors required for chick growth and supplied by fish meal, sardine solubles, dried whey, biopar C and a defatted liver residue were not the same as the factor(s) found in grass juice. Furthermore, Tamimie (1955), using chicks, found that the factor(s) present in fish meal was identical with the liver factor but was not the same as the whey factor, the alfalfa factor or the factor present in distillers dried solubles.

In work with pigs, Gard et al. (1955) found that while grass juice appeared to contain an unidentified factor(s) necessary for growth, there was no clear cut evidence that dried brewers yeast, a dried whey product or fish solubles contained unidentified growth factors required by this species. The results suggest that these latter materials do not contain the unidentified factor(s) found in grass which is required for pig growth.

Acid Improved Growth

The basal diets used to demonstrate growth promoting activity in chicks, poults and pigs appear to have been adequate with respect to known growth-promoting nutrients. Recently, however, DeBusk and Williams (1955) reported that improved growth or food utilization, or both, was obtained with chicks on a ground corn, soybean meal, alfalfa meal diet and on a commercial chick starter as well as on a synthetic diet, by the addition of 1 mg. DL-lipoic acid (6,8-dithiooctanoic acid, protogen-A, DL-thioctic acid) per kilogram of diet.

Appreciable increases in growth rate and utilization of food were also obtained in rats fed purified diets when minute amounts of lipoic acid were incorporated in the diet. This compound is a biocatalyst of known structure which has been synthesized and which is active as a bacterial growth factor. It is present in green plants where it is thought to play a role in the light reactions of photosynthesis.

Previous to the work of DeBusk and Williams this compound had not been demonstrated to be a dietary requirement for higher animals. Stokstad et al. (1953) found no significant growth increases in chicks upon the addition of thioctic acid to diets, either in the absence or presence of aureomycin or sulfaquinoxaline. In preliminary work in our laboratory (Slinger and Pepper 1954) the addition of 0.75 mg. of thioctic acid per pound, to a practical turkey starter, resulted in a 5% increase in weight. This difference did not prove to be significant under the conditions employed. However, the addition of 5% forage juice concentrate gave only slightly more response than the thioctic acid.

This response to grass juice was considerably less than we ordinarily obtain which may be due to the fact that the preparation had been held at room temperature for about two years. Aureomycin, under these conditions, gave a highly significant response and thioctic acid gave no response in the presence of aureomycin. Further work will be necessary to determine whether or not a part of the unidentified growth factor activity ascribed to alfalfa and grass products is due to thioctic acid.

It has been reported that certain

(Continued on page 44)

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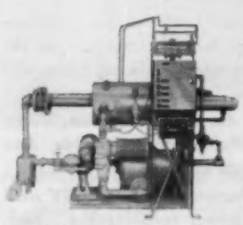

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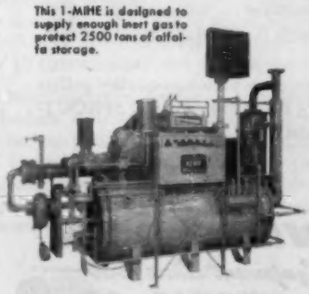

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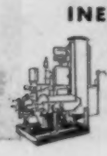

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Dehydrated Alfalfa

. . . a valuable source of minerals for feed fortification

By Roy Elrod

Nutritionist, W. J. Small Company, Division, Archer-Daniels-Midland Co.

It has long been a practice in the feed industry to assess the value of dehydrated alfalfa on the basis of its protein and carotene (pro-vitamin A) content. However, it is becoming increasingly apparent that such a basis for evaluation does not give full consideration to the long list of additional nutrients supplied by dehydrated alfalfa which are of definite value in the proper fortification of feeds for several classes of livestock and poultry. These "extra" nutrients in high quality dehydrated alfalfa include important B-complex and fat soluble vitamins (other than pro-vitamin A), pigmentation factors (xanthophyll pigments), minerals, including trace minerals and unidentified growth and reproduction factors. It is the purpose of this discussion to give particular attention to one category of these "extra" nutrients — the mineral fraction of dehydrated alfalfa.

The information which is available shows that dehydrated alfalfa contains an impressive array of minerals which is of importance in animal and poultry nutrition, plus some others which have not yet been shown to be essential in the diets of animals or poultry.

Schrenk and Silker (10) have reported on the mineral content of a number of samples of dehydrated alfalfa meal obtained from dehydrators in Kansas, Nebraska and Missouri. These figures are contained in Table 1.

Table 1—Mineral Content of Dehydrated Alfalfa Meal

Constituent	Average %*
Ash	10.8
Potassium	2.60
Calcium	1.59
Phosphorus	0.310
Magnesium	0.310
Sodium	0.167
Iron	0.089
Manganese	0.0059
Boron	0.0047
Copper	0.0037

*All data reported on dry weight basis.

In addition to those listed above, other elements have been identified in alfalfa (4). Twenty samples of alfalfa from Kansas were found to have an average zinc content of 35 ppm. Data from a limited number of samples indicated the presence of cobalt in alfalfa at a level averaging 0.2 ppm. In another series of 30 samples analyzed at the Kansas Agricultural Experiment Station the molybdenum content averaged 2.6 ppm. Still other reports indicate that alfalfa contains small amounts of nickel, strontium, lead and palladium.

It is recognized that, in the light of present knowledge, boron, nickel, strontium, lead and palladium are not considered to have any importance in animal or poultry nutrition, but it is well established that the trace element boron is essential for optimum growth of the alfalfa plant.

Soil Governs Mineral Content

As is to be expected, the concentration of some of the mineral elements in the alfalfa plant will vary according to the fertility status of the soil on which the crop is grown. Phosphorus, in particular, is quite sensitive to the amount of available soil phosphorus. Soil fertility also influences the yield and composition of alfalfa which in turn affects the nutritive value of the plant.

A University of Minnesota report (2) indicates that the yield, protein and phosphorus content of alfalfa generally are increased as a result of phosphate fertilization. Proper fertilization significantly increased the cobalt, copper and manganese content of alfalfa grown in Utah (4) and the fertilized alfalfa resulted in improved growth of rabbits. Other investigators have shown that the application of potassium fertilizer increased the content of sugars, dextrins and fat-like materials in alfalfa and still others have reported that two trace elements, manganese and boron, affect the amino acid content of the alfalfa plant.

Workers at the Washington Agricultural Experiment Station (5) fed alfalfa hays with high and low phosphorus content as the major portion of the diet for rabbits and observed the following effects in rabbits fed the low phosphorus hay: significantly retarded growth, lower mature body weight, impaired breeding efficiency, decreased breaking strength of the bones, and abnormal bone structure. Thus it is quite apparent that the production of quality alfalfa products must begin with proper attention to soil fertility problems.

Dehydrated alfalfa can be considered to be of some importance as a source of minerals in the formulation of poultry rations, for although it does not contribute a large portion of the required major minerals, with the exception of potassium, it will contribute materially to the needed amounts of some of the essential trace elements. For example, when dehydrated alfalfa is included in a ration for starting chicks at a level of 5%, the alfalfa will supply 65% of the needed potassium, 220% of the iron, 93% of the copper and 31% of the magnesium, but only 8% of the required calcium and 1.25% of the phosphorus.

Dehydrated alfalfa will make similar contributions to the mineral fortification of swine feeds as it will supply (when used at a level of 5%) 52% of the potassium, 133% of the iron and 52% of the copper needed in a complete ration for weanling pigs. The use of dehydrated alfalfa in gestation rations for swine at levels of 10 to 15% will permit the alfalfa to supply a larger portion of the required minerals.

However, it is in the field of ruminant nutrition that the mineral constituents of alfalfa have been shown to be of particular value.

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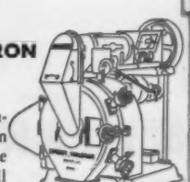

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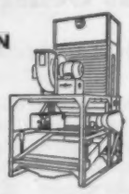

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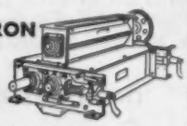

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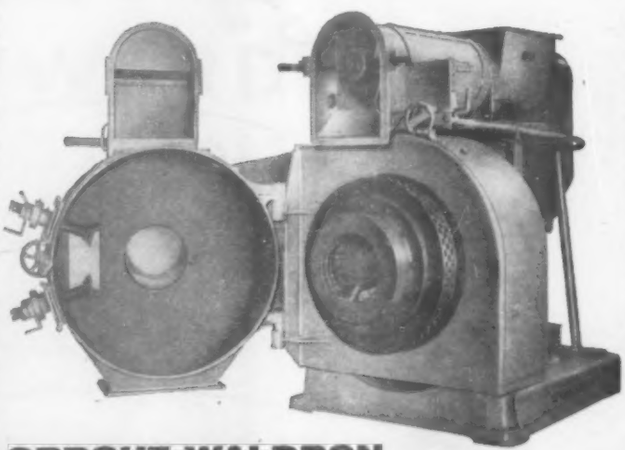

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sources of phosphorus. When either feedstuff makes up a major portion of the total feed intake, such as in wintering rations for cattle, calves or sheep, enough calcium will be supplied to meet the animals' requirements and a substantial amount of phosphorus will be provided. It is interesting to note here that California investigators (8, 9) in experiments with sheep have found the phosphorus in alfalfa to have a digestibility of approximately 94%, indicating that alfalfa phosphorus has a high biological availability for ruminants.

In recent years, research by ruminant nutritionists on the utilization of poor quality roughages and high-fiber by-product feeds such as corn cobs, straw, cottonseed hulls, etc., has focused attention on the mineral fraction of dehydrated alfalfa. In addition, some of this research has served to demonstrate the rather marked nutritional differences between high quality and poor quality roughages.

In digestibility studies with steers fed a corn cob basal ration, Burroughs and associates (1) found that the addition of a water extract of dehydrated alfalfa increased the apparent coefficient of digestibility of dry matter in corn cobs from 34.4% to 48.9% at the end of a 30-day feeding period. In other similar digestion trials the addition of the ash of dehydrated alfalfa increased the digestibility of dry matter in corn cobs from 38.5% on the basal ration to 52.0% on the ash supplemented ration (data are average of two trials). The authors concluded that, "The results are interpreted to indicate the presence of inorganic nutrients in good quality alfalfa hay or meal which are essential to rumen microorganisms involved directly in roughage digestion."

The Ohio investigators (7) then carried out feed lot steer fattening experiments to determine if the beneficial results obtained with alfalfa ash in digestion trials would have similar effects in the feed lot. The ash from 1.75 lb. dehydrated alfalfa meal was added to a basal steer fattening ration composed of corn and cob meal full-fed, 1.5 lb. soybean oil meal and 2.2 lb. hay plus free access to salt and a mineral mixture of two parts steamed bone meal, two parts ground limestone and one part salt. Cod liver oil was fed as a source of vitamin A.

Another lot of steers was fed the basal ration supplemented with a complex mineral mixture containing trace elements. The feed lot data from this 210-day feeding trial are summarized in Table 2.

Table 2

Treatment	Control	Alfalfa ash	Trace minerals
Av. initial wt....	625	624	630
Av. final wt.	1069	1084	1063
Av. daily gain...	1.75	2.19	2.07
Feed/cwt. gain (corn & cob meal plus SBOM) ...	863	771	802
Cost/cwt. gain ..	$21.31	$19.00	$19.83

These results show a marked increase in rate and economy of gain in the lots of steers fed the basal ration supplemented with either dehydrated alfalfa ash or a complex mineral mixture which included trace minerals. However, the results with the complex mineral mixture did not equal the results with dehydrated alfalfa ash.

Further Evidence

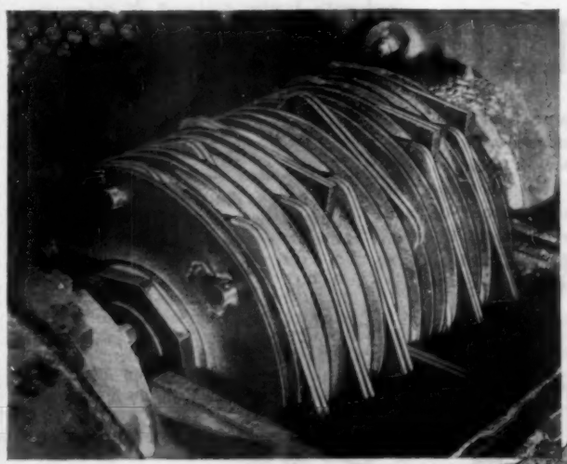
Further evidence concerning the stimulatory effect of alfalfa minerals upon ruminant digestion was reported by Swift and associates of the Pennsylvania Experiment Station (11). In digestion trials with sheep, the digestibility of a corn cob basal ration, fed with and without alfalfa ash supplementation, was determined. Measurements were also made of the methane production in the rumen and of the energy value of the experimental rations.

Alfalfa ash supplementation increased the digestibility of all ration constituents, particularly of crude fiber, for which the increase was statistically significant. The TDN value of the ash supplemented ration was increased significantly, and the digestible energy was increased. Methane production in the rumen was definitely increased by ash supplementation.

The investigators interpreted their results to indicate that alfalfa ash supplementation increased the rate of fermentation in the rumen, which resulted in more efficient digestion of the ration with the net result that a greater amount of energy was made available to the animals.

Research workers at the Oklahoma Agricultural Experiment Station have also studied the influence of the ash of alfalfa upon the utilization by sheep of poor quality roughages. In rather extensive digestion trials basal rations containing either corn cobs, cottonseed hulls or wheat straw as the roughage were tested, with and without alfalfa ash supplementation. The addition of alfalfa ash to a wheat straw basal ration (13) increased crude fiber digestibility from 48.3% to 52.1%, and increases were also recorded for the digestibility of organic matter, NFE and energy.

A series of digestion trials involving cross-bred wether lambs (3) was conducted by the Oklahoma investigators to test the effect of various mineral supplements on the digestibility of a corn-cob ration. The low ash basal ration which contained 1.6% minerals and 12.5% protein, was composed of ground corn cobs, 45%; ground yellow corn, 25%; corn gluten meal, 20%; corn syrup, 7%; corn oil, 3%; plus dicalcium phosphate, iodized salt, cobalt sulfate and cod liver oil. This basal ration was supplemented with either 35 gm. alfalfa ash; a mineral mixture containing salt, magnesium, potassium, copper, manganese, zinc and iron; or a "synthetic" alfalfa ash made up



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to simulate the mineral constituents of alfalfa.

It was found that the apparent digestion of organic matter and crude fiber was significantly increased by the addition of either alfalfa ash or synthetic alfalfa ash and digestion of other ration fractions was also increased, but not significantly in all cases. The natural alfalfa ash gave somewhat better results than the synthetic ash. Supplementation of the basal ration with the mineral mixture containing salt, potassium, magnesium and commonly used trace minerals had no influence on condition or behavior of the animals and there was no improvement in ration digestibility.

In further studies with a cottonseed hull basal ration (12) certain minerals were omitted from the "synthetic" alfalfa ash in an attempt to determine the particular element(s) in natural alfalfa ash responsible for increased utilization of cottonseed hulls. When iron or copper was omitted from the ration, a growth depression occurred; however, growth depression was greatest when iron was omitted. The omission of cobalt, magnesium, manganese or zinc individually caused no growth depression. Omission of molybdenum gave divergent results in two trials.

Feed lot fattening trials with lambs were also conducted by the Oklahoma researchers (14). In one experiment the addition of alfalfa ash to a ration of 50% cottonseed hulls and 50% grains increased gains 23% and feed efficiency 32%. Another series of two lamb-feeding trials was conducted, using a basal ration composed of cottonseed hulls, 35%; ground yellow corn, 49.5%; cottonseed meal, 12.4%; dicalcium phosphate, 2.40%; salt, 0.50%, and vitamin A and D oil, 0.20%. The first trial which involved six lots of nine lambs each, fed for 70 days, is summarized in Table 3.

Table 3

	Av. daily gain	Lb. feed/lb. gain
Basal	0.45	8.3
Alfalfa meal, 8.5%	0.54	8.2
Alfalfa ash, 0.8%	0.53	7.9
Molasses, 8.5%	0.51	8.3
Molasses ash, 0.8%	0.42	9.2
Alfalfa and molasses ash, 1.6%	0.57	7.8

Similar results were obtained in a second trial, and the authors commented: "Alfalfa meal improved lamb performance although it was added at the expense of corn, thus lowering the energy content of the ration." It was observed that the basal-fed lambs sorted out the grain, leaving the cottonseed hulls, while the supplemented rations were readily consumed, indicating that the supplements were contributing inorganic elements necessary for the utilization of cottonseed hulls.

In another Oklahoma experiment with lambs, designed to determine the effect of the ration on vitamin synthesis in the rumen of sheep (6), it was found that supplementation of a corn cob ration with alfalfa ash promoted increased synthesis of riboflavin, nicotinic acid and pantothenic acid by rumen microorganisms.

Contains Needed Elements

Thus, it is clearly evident from the above described research that the mineral fraction of dehydrated alfalfa contributes inorganic elements which are required by rumen microorganisms for efficient utilization of poor quality roughages. No doubt this mineral response is an important reason for the excellent results obtained when dehydrated alfalfa is added to practical rations for ruminants.

It is expected that feed manufacturers will become increasingly aware of the advisability of including dehydrated alfalfa in manufactured supplements for beef cattle and sheep as a means of insuring top performance from their feeds which are used to supplement roughages of all kinds and of widely varying quality.

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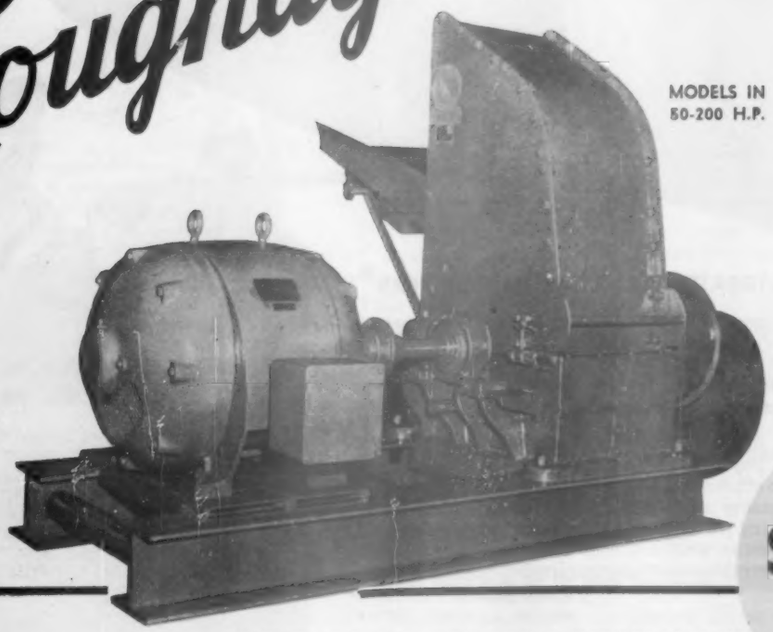

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Dehydrated Alfalfa Research

. . . the 1955 record

The American Dehydrators Assn. has now completed the seventh year of an organized program of research. The general aim of the association is to find ways and means of producing the most nutritious dehydrated alfalfa in abundant quantities at the lowest possible cost and in the form most convenient for the user. To help the association along this path, the Alfalfa Research Council was formed in 1949, and the council has been the guiding hand in directing the spending of the association's research funds. The sole function of this council is to guide and advise the association on research, scientific and technical questions applying to dehydrated alfalfa.

In the seven years since 1949, the American Dehydrators Assn. has appropriated research funds totaling $200,000, of which $175,000 has now been spent or assigned.

Every precaution is taken to spend these funds prudently on practical research applying to the production and use of dehydrated alfalfa. In general the association has tried to support investigations at state experiment stations which might not be conducted with public funds or to supplement public funds to get data and information which might not be obtained otherwise.

The membership of the American Dehydrators Assn. has had the firm belief that only through such a program of research could the alfalfa dehydrating industry expect to attain its full potential growth and importance in the feed and livestock industries. The projects which are currently being financed by the American Dehydrators Assn. through research grants are as follows:

1. Increasing nutritive value and palatability of dehydrated alfalfa by manipulating of harvesting intervals.

This research is being sponsored at the University of California, College of Agriculture, under the supervision of Dr. J. H. Myers of the animal husbandry department, Dr. F. H. Kratzer of the poultry husbandry department and Luther Jones of the agronomy department. The purpose of this investigation is to determine what stage of growth of alfalfa will produce forage of the highest nutritive value commensurate with the maximum yield of nutrients per acre. Previous investigations have only scratched the surface in this type of study of alfalfa or other roughages.

It has been shown that lignin, cellulose and hemicellulose are not utilized by the simple stomach animals even though they may disappear to a certain extent in the digestive tract. Cellulose and hemicellulose are utilized by ruminants but their utilization is influenced to a very great extent by the lignin content of the roughage.

Preliminary results of this California study suggest that the greatest nutritive value of alfalfa is before 60% bud. The greatest decrease of nutritive value is between 50% bud and 10% bloom, after which the decrease is more gradual. Nothing is gained from allowing alfalfa to mature past the 10% bloom from the standpoint of total yield over the season.

2. The utilization of artificially dehydrated alfalfa as a feed for dairy cattle.

This study is being sponsored at the University of Connecticut, College of Agriculture, under the supervision of Dr. H. D. Eaton. The objectives are to determine the relative utilization by the dairy calf of carotene from dehydrated alfalfa and of vitamin A from the dry carrier when each is fed at medium to high levels of intake. A second objective is to determine the utilization of body stores of carotene by calves fed different levels of carotene from dehydrated alfalfa. This work has only recently started, being initiated in July, 1955.

3. Unidentified growth factors in alfalfa.

This project is being sponsored at the University of Illinois, College of Agriculture, under the supervision of Drs. H. M. Scott and R. G. Hansen. Work at the Illinois station has consistently demonstrated that alfalfa contains a factor that is required for chick growth. The factor does not appear to be one that is already recognized as being required and is not the same as unidentified growth factors in whey, liver, distillers dried solubles or fish products. Corn and soybean rations as well as purified diets are improved by alfalfa supplementation. Previous work has shown that there is considerable variation between samples of alfalfa meal, both with respect to growth stimulating and growth inhibiting properties. This project is investigating the possibility that the concentration of both the growth stimulating and growth inhibiting factors may be related to the stage of maturity at which the alfalfa is cut.

4. Dehydrated alfalfa marketing study.

This project is being sponsored at Kansas State College under the supervision of Dr. Leonard W. Schruben, assisted by William E. Cathcart and

(Continued on page 17a)

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John H. McCoy, of the department of agricultural economics. The work undertaken in this project is to obtain information relative to marketing and storage practices, price trends and utilization of dehydrated alfalfa. The study also covers preferences for dehydrated alfalfa by feed manufacturers and livestock feeders.

Information developed in this study would be used as a basis for orderly marketing of dehydrated alfalfa, which would do much to stabilize the industry and provide a continuing market for the product. The project is still under way. Some of the preliminary material has already been printed and some portions were summarized in articles by Dr. Schruben in Feedstuffs Jan. 30, 1954, Jan. 22, 1955, and Sept. 17, 1955. It is expected that the program will be completed this year.

5. Soil fertility in relation to the production of alfalfa for dehydration.

This project is being sponsored at the University of Nebraska under the supervision of Dr. Robert L. Fox of the department of agronomy. This is the fourth year of the project and a number of findings have been reported in progress statements since the initiation of the study in 1952. The study is being conducted in the Platte Valley of Nebraska. Much information has been developed on factors affecting the growth of the alfalfa plant.

Appreciable root activity of alfalfa has been demonstrated in the soil at great depth and the importance of this region increases as its temperature rises late in the growing season and as moisture becomes depleted in the surface soil.

There is a considerable variation in phosphorus content of alfalfa as a result of phosphorus fertilization and soil differences. Correction of sulfur deficiencies increases the protein and carotene content of alfalfa. Phosphorus fertilization has little effect on the carotene content even where yields are increased. In these tests, nitrogen fertilization failed to significantly influence the yield or composition of alfalfa, while potassium fertilization influenced the composition but not the yield of alfalfa.

6. Dehydrated alfalfa meal and alfalfa hay as protein supplements for fattening beef calves.

This project is being sponsored at Oklahoma A&M College, with Dr. L. S. Pope as project leader. This is a three-year study and will be completed this year. One of the preliminary results reported indicated that dehydrated alfalfa meal could replace one half of cottonseed meal in a winter steer ration without affecting the daily gains of the steers. There was no appreciable difference in feed required per hundredweight gain or cost per hundredweight.

7. Nutritional value of dehydrated alfalfa meal as a source of unidentified factors in breeder rations for turkey hens.

This project is being sponsored at Texas A&M College under the supervision of Dr. J. R. Couch. The project was completed last year. In previous findings it had been determined that the inclusion of 5% dehydrated alfalfa meal in an all-vegetable protein diet containing vitamin B_{12} increased hatchability of chicken eggs. In this study with turkeys, fertility was found to be increased when dehydrated alfalfa leaf meal was added in the presence or absence of B_{12}, which suggests that the alfalfa contains an unidentified factor necessary for hatchability and fertility in turkeys as well.

Hatchability of eggs during the last six weeks of the test was increased 23.3% by the substitution of dehydrated alfalfa leaf meal for an equivalent amount of soybean oil meal and ground milo. When alfalfa was fed with condensed fish solubles as a supplement to the basal diet, a still further increase was obtained. In all groups in which alfalfa was fed with condensed fish solubles, the hatchability increase ranged from 31% to 50% over that obtained with the basal group for the last six-week period of the test.

8. Vitamin E in chick rations.

This investigation is being sponsored at the Wisconsin Alumni Research Foundation, with Dr. Phillip H. Derse as project leader. The object of the study is to determine the availability to the chick of vitamin E in dehydrated alfalfa. A preliminary

(Continued on page 22a)

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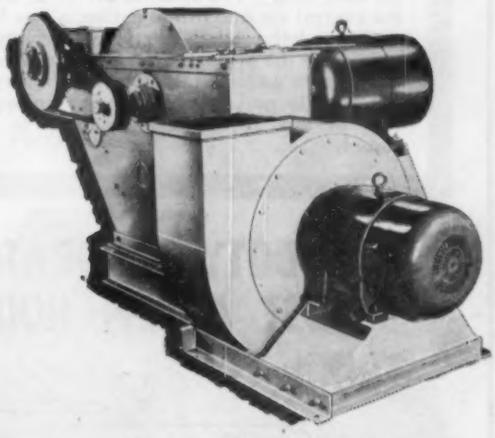

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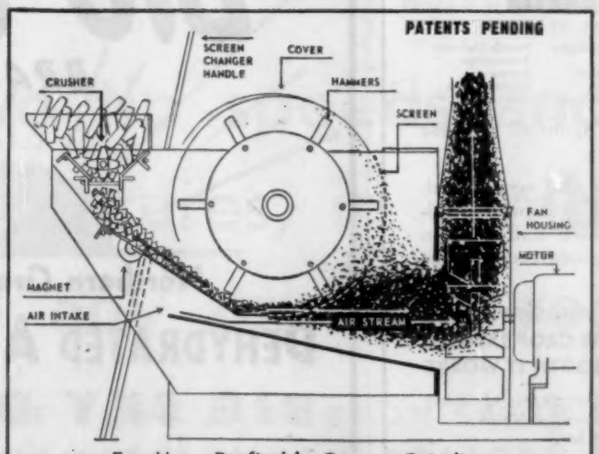

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Californians Map Fight Against Destructive Spotted Alfalfa Aphid

BAKERSFIELD, CAL. — California's $125,000,000 alfalfa hay industry faces another gloomy season because of spotted alfalfa aphid infestation, but growers don't show any indications of throwing in the towel.

This observation was made by Dr. Ray Smith, University of California entomologist, speaking at the Central California Agricultural Forum in Bakersfield, Cal., recently.

He said May through September would be critical months, estimating that $6,000,000 would be spent in control work during the coming season.

Asked if the aphid problem might cause sharp reductions in alfalfa planting, Dr. Smith said definitely not.

He said the general feeling is that alfalfa can be produced despite the aphid if "growers use proper and timely control measures."

Dr. Smith and a fellow entomologist, J. E. Swift, said without control measures the aphid could destroy half the state's crop. "But of course there will be control, and it can be 99% effective as well as reasonable in cost."

The spotted alfalfa aphid, formerly called the yellow clover aphid, has marched northward through California with devastating suddenness. First found in New Mexico in 1954 —originally from India, some authorities think —the aphid spread through southern California that summer. By summer 1955 the aphid menaced San Joaquin Valley, particularly Kern County, the No. 1 certified alfalfa seed producing district in the nation.

As a result, every major alfalfa county is now under attack by the tiny pest.

What about control measures?

Malathion and parathion are best, the forum assembly was told. Malathion sprayed by air costs about $3.40 an acre. Parathion costs from $1 an acre by ground to $2.70 by air. Dusts are not advisable because of drift to neighboring fields where cows and other animals may be pastured, the forum was told.

Community effort is vital, the entomologists warn. If Jones does a good spray job on his ranch and Smith, his neighbor, neglects his field or big patches along his fence, aphids will ramble back in very shortly.

The growers were told that eventually natural enemies may stop the aphid. Ladybird beetles naturally present in fields sometimes give good control, but there is no evidence that the release of ladybird beetles brought down from the mountains is effective.

Meanwhile a fungus found near San Diego, Cal., last summer offers some hope as a biological weapon, particularly under humid conditions. This fungus virtually wiped out spotted alfalfa aphids in some fields there.

Another method of attack is to find alfalfa varieties that resist the aphid. Lahontan is one of these. Spotted aphids simply do not reproduce on Lahontan, for reasons yet unexplained.

Besides killing the lower leaves of alfalfa plants, the aphid covers plants with honeydew in which a black fungus grows. Plant destruction has ranged up to 60% in some untreated stands.

In addition to reduction of yields and the lowering of quality, the aphid also affects the palatability and feeding value of alfalfa. Chemical analyses have shown that protein content of severely damaged hay may be reduced by more than 5% while pigment reduction may exceed 40%.

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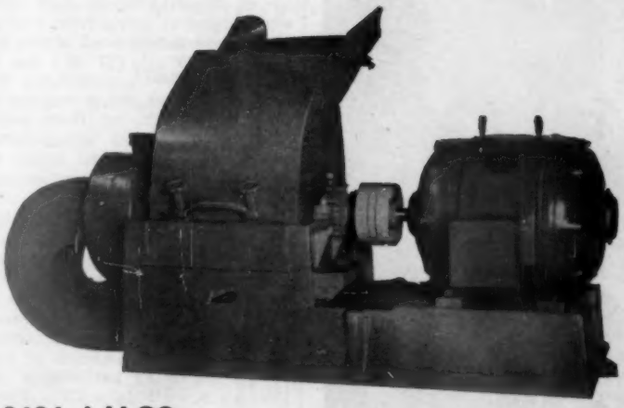

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Recent Developments Concerning

Utilization of Alfalfa Carotenoids by Chicks

By Roy Elrod

Nutritionist, W. J. Small Company, Division, Archer-Daniels-Midland Co.

Dehydrated alfalfa has long been considered an excellent source of the carotenoids carotene and xanthophylls for use in poultry rations. The carotene, or more correctly, the beta-carotene of dehydrated alfalfa serves as a source of vitamin A activity for poultry as it is efficiently converted into vitamin A in the intestinal tract of the bird.

The function of the xanthophyll pigments of alfalfa is considerably different in that these pigments have no direct nutritional value, but instead are deposited in the shanks and just beneath the skin of broilers to give an attractive yellow color to the dressed carcass. Well-pigmented birds are generally preferred by consumers in many areas, with the result that the adequacy of pigmentation factors is an important consideration in the formulation of broiler feeds.

The commonly used sources of xanthophyll for use in feeds include dehydrated alfalfa meal, yellow corn, corn gluten meal and commercial xanthophyll concentrates.

In the practical feeding of broilers it has been observed that pigmentation effects from a ration may vary considerably. This variability in the degree of pigmentation obtained in broilers has been shown to be due to several factors, which include health of the birds, breed and strain of birds, ration composition, and possible loss or deterioration of the pigments in the feed and/or in the intestinal tract of the bird.

How, then, is it possible for the feed formulator to be reasonably sure that his feed will produce satisfactory pigmentation in the birds to which it is to be fed?

In answer to this question, there is evidence from recent research which indicates that it is possible to obtain the desired pigmentation through proper attention to ration formulation. In healthy birds of the yellow-skinned breeds, probably the most important factor affecting pigmentation is the adequacy of pigment sources in the ration. Although yellow corn is a good source of xanthophyll when used as the primary energy source in broiler rations, generally it alone will not produce satisfactory pigmentation. Further supplementation with xanthophyll-rich ingredients such as dehydrated alfalfa meal, corn gluten meal or commercial xanthophyll concentrates is necessary.

However, because of supply problems and the current emphasis on increased energy levels in broiler feeds, corn gluten meal has been reduced in amount or completely eliminated from formulas, making it imperative that the supplemental pigments be adequately supplied from other sources.

Richest Source

Dehydrated alfalfa meal, which is the richest source of xanthophyll among all commonly used feedstuffs, can be quite advantageously utilized to provide the required supplemental pigment.

Although commercial xanthophyll concentrates are available, it has been reported recently that such products may be unsatisfactory due to poor stability and ineffectiveness in producing the desired degree of pigmentation in broilers. Research workers of the U.S. Department of Agriculture, Livingston and associates (1), reported that xanthophyll concentrates prepared from corn, lettuce or alfalfa were unstable when stored alone or incorporated in commercial broiler feed.

One such concentrate from alfalfa which had been saponified during its preparation, retained only 26% or less of its initial xanthophyll content when added at levels from 0.25% to 10% to two commercial broiler feeds stored at 25° C. (77° F.) for four months. Other concentrates from corn, lettuce and alfalfa retained only from 25 to 37% of their original xanthophyll content when incorporated into a commercial broiler feed at levels 0.25% or 1% and stored at 25° C. for four months.

In contrast, dehydrated alfalfa meal retained 64% of its xanthophyll content during a similar storage period. These workers also demonstrated that the stability of the xanthophyll in the concentrates and in dehydrated alfalfa could be markedly improved by the addition of either animal fat or an antioxidant (Santoquin - 6 - ethoxy - 1,2 - dihydro-2,2,4 - trimethylquinoline) or a combination of both.

Further evidence concerning the effectiveness of different pigment sources and the influence of the antioxidant DPPD upon pigmentation has been reported by Wilgus (3). In this research, dehydrated alfalfa meal, yellow corn and three xanthophyll concentrates were tested with and without added DPPD in a pigment-low basal ration containing white corn. In all comparisons, rations containing 2.5 or 5% dehydrated alfalfa meal resulted in marked increases in the amount of pigment deposited in the skin taken from the toe webs of the birds as compared with the basal ration alone or the basal supplemented with either of the three xanthophyll concentrates. The presence of 0.0125% DPPD roughly doubled the concentration of pigments in the web skin of the broilers.

Effective Ration

The author concluded that "The pigment supplements tested, dehydrated lettuce meal and two different xanthophyll concentrates, were of no pronounced value in improving pigmentation in this experiment." It was further concluded that a combination of 30% yellow corn, 5% dehydrated alfalfa meal, and 0.0125% DPPD could be expected to give satisfactory pigmentation even if one half of the yellow corn is replaced with a non-pigmented grain such as kafir grains or white corn.

Research workers at the Storrs,

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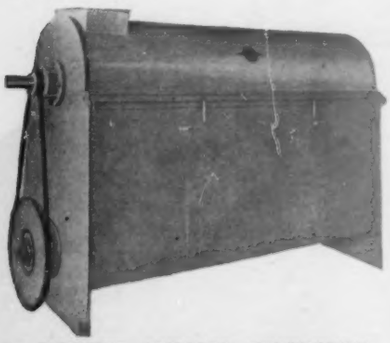

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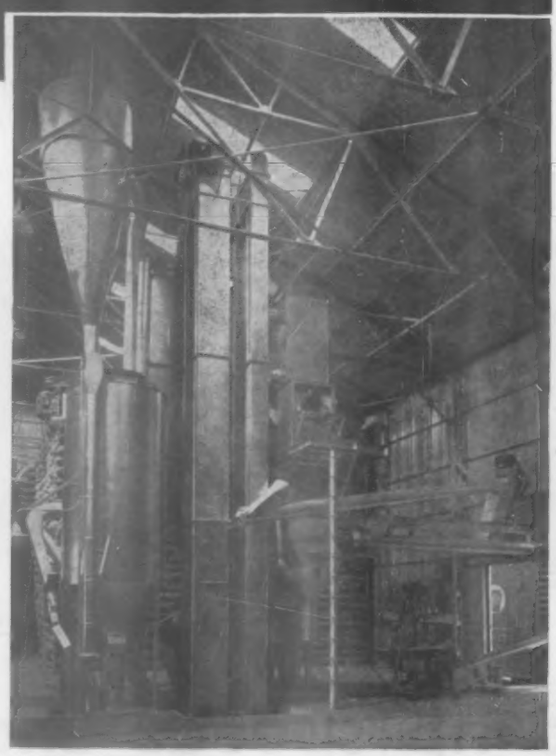

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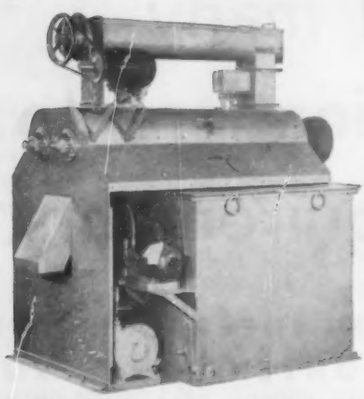

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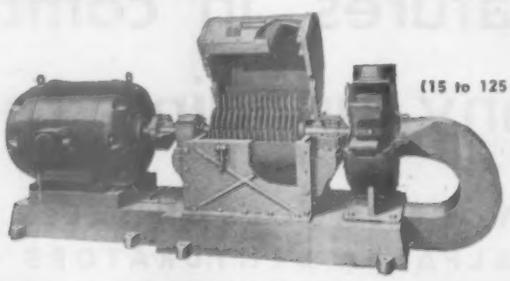

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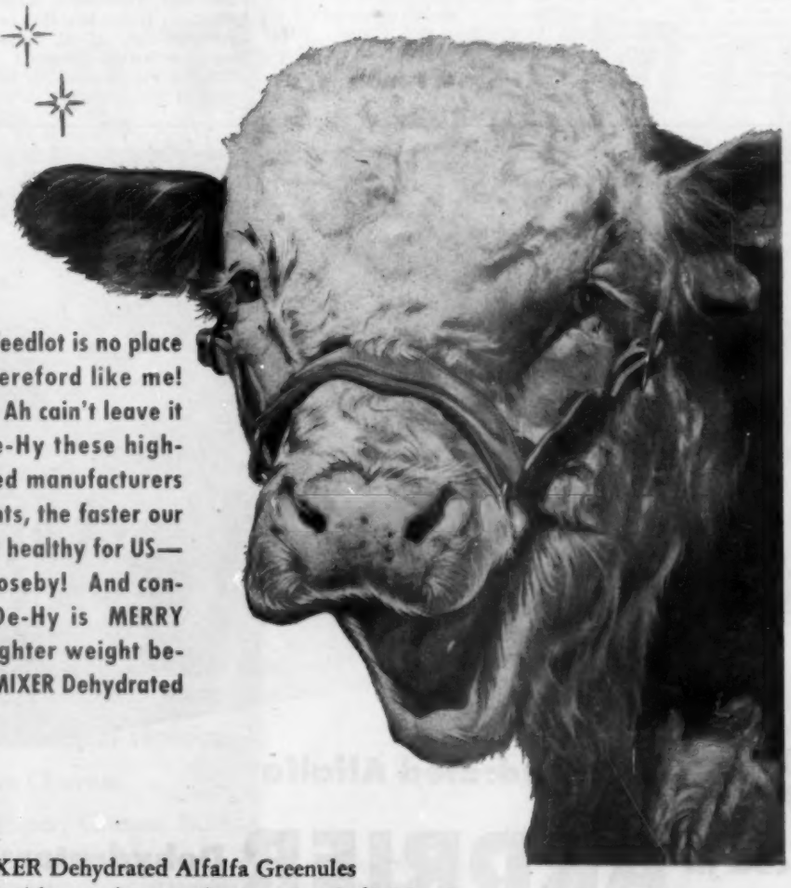

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Conn., Agricultural Experiment Station (2) have also reported that the addition of an antioxidant (DPPD) to experimental broiler rations consistently increased the deposition of xanthophyll in the skin of broilers.

There still remains a need for further research on the availability and utilization of pigments from various sources and the effects of antioxidants and animal fats. However, the information available at the present time indicates that satisfactory pigmentation can be obtained from the use in broiler rations of an adequate level (3-5%) of a high quality dehydrated alfalfa meal in combination with yellow corn, and that at least one antioxidant, DPPD, aids materially in enhancing broiler pigmentation.

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DEHYDRATED ALFALFA RESEARCH

(Continued from page 17a)

summary of progress reports that excellent availability was indicated in the results of the experiment.

These eight projects are the ones that are currently being financed by the funds of the American Dehydrators Assn. The amount involved in the grants made this year is approximately $21,000.

Before the annual meeting of the association, a progress report of each of the above projects will be submitted by the investigators to the research council. These will be reviewed and studied by the ADA research council. At the same time the group will study applications for grants for new projects. These applications are to be accompanied by an outline of the project, its objectives and methods of operation.

Dr. L. E. Card, head of the animal science department of the University of Illinois, Urbana, is chairman of the Alfalfa Research Council. Other members of the council are as follows:

Dr. H. J. Almquist, director of research, the Grange Co., Modesto, Cal.; Dr. H. Ernest Bechtel, director, Larro Research Farm, General Mills, Inc., Indianola, Iowa; Dr. W. M. Beeson, professor of animal husbandry, Purdue University, Lafayette, Ind.; Dr. H. R. Bird, chairman, department of poultry husbandry, University of Wisconsin, Madison; Dr. L. C. Cunningham, professor of farm management, Cornell University, Ithaca, N.Y.; Roy C. Elrod, nutritionist, the W. J. Small Co. Division, Archer-Daniels-Midland Co., Minneapolis; Dr. E. F. Frolik, chairman, department of agronomy, University of Nebraska, Lincoln; Dr. H. O. Graumann, research agronomist, U.S. Department of Agriculture, Beltsville, Md.; Dr. George O. Kohler, Cerophyl Laboratories, Inc., Kansas City, Mo.; Gordon Lindl, engineer, Arnold Dryer Division of Heil Co., Milwaukee, Wis.; Dr. Ray Thompson, alfalfa section, Western Utilization Research, USDA, Albany, Cal.; H. C. Schaefer, manager, nutrition research laboratory, Ralston Purina Co., St. Louis, secretary of the council.

Northern Seedmen To Battle West for Alfalfa Markets

RAPID CITY, S.D. — A doubled advertising budget to meet the competition of West Coast alfalfa seed competition was approved here recently by the Northern Seedmen's Assn. Some 40 members of the association from the north central tier of states attended the meeting.

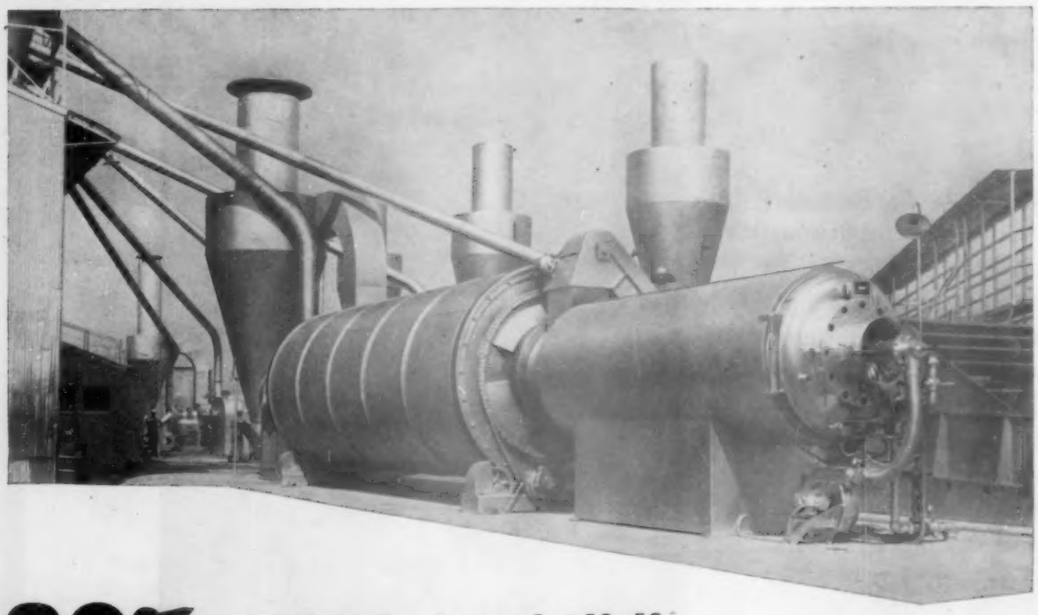
Louis Bober, a Rapid City seed dealer, said that the northern states are faced with the tremendous production of certified seed varieties in California and the West Coast states.

"They now produce 40 to 60% of the total alfalfa seed in the U.S. We are no longer holding our markets. The coast production of alfalfa has pushed prices so low that production of alfalfa seed is not a very profitable enterprise for our farmers or seedmen," Mr. Bober said.

To counteract the West Coast competition, Mr. Bober urged, among other things, an intensified advertising program and production and certification of new varieties.

Price of alfalfa seed this year has averaged between 15 and 20¢ lb., depending on quality and time of sale, it was stated at the meeting. Last year it sold for about 34¢. The high was in 1951 when farmers paid an average of 60¢ lb. for certified alfalfa seed.

During the meeting, Dr. M. W. Adams, plant scientist at South Dakota State College, Brookings, reviewed characteristics of various certified alfalfa strains and work the college is doing to develop others. "The type of seed we are now producing is no longer so desirable," he said. He mentioned the Grimm and Dakota commons.



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Use of Dehydrated Alfalfa Meal in Formula Feeds

By Dr. H. S. Wilgus and Joseph Chrisman

EDITOR'S NOTE: Even in the face of demands for higher energy and more economical producing feeds, dehydrated alfalfa meal rates very good, it is pointed out in the accompanying article by Dr. Wilgus, director of nutrition and research for the Peter Hand Foundation, and Joseph Chrisman, executive vice president of the American Dehydrators Assn. The text of a talk presented by Mr. Chrisman at the recent North Carolina Nutrition Conference, the article documents the advantages of using dehydrated alfalfa in poultry, swine and ruminant rations with data from a number of agricultural experiment stations.

With increasing pressure on the feed industry to provide feeds capable of ever-better efficiency and economy of production of meat, milk, eggs and wool, there is a strong trend to examine the contributions of each feed ingredient more critically. It is especially timely to review dehydrated alfalfa meal in light of such trends.

This ingredient has become quite well standardized now so that the bulk of it is purchased as a product guaranteed to contain 17% protein and 100,000 units of vitamin A (60 mg. carotene) per pound. There are some who question if this is fully satisfactory for the variety of feeds into which it now goes.

Poultry Feeds

The use of dehydrated alfalfa in all kinds of poultry feeds is nearly universal in the U.S. Its nutritional contributions to such feeds have been reviewed (1, 2) and have been shown to be reasonable in cost (3). Dehydrated alfalfa meal is considered to be an excellent source for poultry of vitamin A, xanthophylls, vitamin E, vitamin K, folic acid, and unidentified growth factor(s). Its riboflavin content is worthy of note as is its protein quality. The amounts per pound of ration of some of these factors supplied by 2.5% dehydrated alfalfa meal, compared to minimum requirements of the chick, are shown in Table 1.

The importance of adequate vitamin A in all types of rations is too well accepted to require discussion. The carotene in alfalfa is fully converted to vitamin A by poultry. It is apparently superior in this respect to isolated carotene in oil, indicating some factor(s) in alfalfa which aids in such utilization. Table 2 shows some unpublished data from three trials at the Colorado Agricultural Experiment Station, comparing carotene and vitamin A values in the plasma of chicks fed carotene in equal amounts as pure carotene in oil and as dehydrated alfalfa meal.

Limited data indicate that the carotene in dehydrated alfalfa meal is probably more stable in a mixed feed than is vitamin A fish oil.

Accompanying carotene in alfalfa are the orange-yellow xanthophyll pigments, about 1.7 times as much as carotene, or about 100 mg. per lb. in 100,000 A dehydrated alfalfa meal. This constitutes the richest generally used ingredient in this respect. It adds special value to dehydrated alfalfa meal in broiler rations where deep skin pigmentation is desired, especially in areas where yellow corn is largely replaced with milo or kafir grain. In such areas, it is important in laying mashes to avoid yolks that are too pale.

The efficiency of utilization of carotene and of xanthophyll in dehydrated alfalfa meal is improved by incorporation of DPPD in the ration, as reported by the Storrs workers (4). BHT was found by these workers to be less effective than DPPD. Similar data on DPPD by the author are shown in Tables 3 and 4. These examples of comprehensive studies show as much as two-fold increase in skin xanthophyll deposition through the use of DPPD. They indicate that 2.5% dehydrated alfalfa meal is approximately equivalent in pigmentation value to 30% of the yellow corn used. The data in Table 4, showing a two-to-four-fold increase in liver vitamin A from carotene supplied by yellow corn and alfalfa by use of

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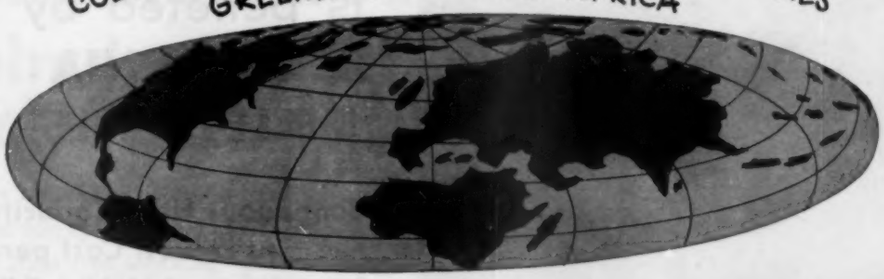

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DPPD, is in excellent agreement with the reports of Matterson, et al (4) and of Monson and coworkers (5).

Vitamin K is receiving much additional attention now in poultry nutrition. This has been stimulated by extensive outbreaks of the so-called hemorrhagic disease or syndrome in chickens, especially broilers but also young replacement stock, at about five to six weeks of age. It appears to be caused by stress factors, such as disease or excessive medication with sulfaquinoxaline, possibly in connection with inadequate or borderline dietary vitamin K. Vitamin K therapy sometimes helps.

The major natural sources of K are alfalfa and fish meal. However, freshly-processed fish meal may be deficient in it. Variations in the vitamin K content of alfalfa are not established. Old process soybean oil meal was a fair source, but solvent-process meal, now nearly universally used, is probably a poor source due to the low oil content. Thus, improvements in processing of fish meal and soybean oil meal may have contributed to this trouble. Studies on the vitamin K content of dehydrated alfalfa meal are in progress.

The distribution of folic acid in feed ingredients is not well known. Limited data indicates that modern high-energy feeds may be approaching the borderline. Until more research clarifies this situation, use of ingredients above average in folic acid content, such as dehydrated alfalfa meal is wise.

The vitamin E values for dehydrated alfalfa meal have been modified downward to about 60 mg. or units per pound as improved techniques eliminating inactive forms of tocopherols have been utilized. There is data from one station showing that only about 30% of this amount is biologically available to the chick. On the other hand, there is some work in at least three other laboratories that does not tend to support this.

This vitamin is of increased importance due to evidence presented by the Storrs workers in their comprehensive encephalomalacia project that broiler rations may be borderline in vitamin E content. The Cornell (6), Texas (7) and Washington State (8) workers have shown that practical type turkey breeder rations may be deficient in vitamin E for maximum fertility and hatchability. The Washington State basal ration included 2.5% dehydrated alfalfa. Table 5 shows some of this data.

The Texas workers have reported that dehydrated alfalfa meal provides an unidentified factor required in breeding rations for chickens (9) and turkeys (10). However, the corn-soya type basal diets used had no vitamin E supplementation, hence the response in fertility and hatchability to dehydrated alfalfa meal might well have been due to its vitamin E. It should be noted that in the first test, dehydrated alfalfa meal prevented vitamin K deficiency noted in newly hatched chicks and also gave a marked increase in the folic acid content of the egg when vitamin B_{12} was added also. This reemphasizes the multiple virtues of dehydrated alfalfa meal.

Incorporated in a corn-soya type basal ration, workers agree generally that dehydrated alfalfa generally promotes a growth response at the 5% level due to some unidentified factor (11). The response may be variable and at the 10% level may show some growth depression, apparently related to the saponins in alfalfa.

Saponin contents vary widely in different samples (11). At practical levels of addition, 5% or less, the growth-inhibiting substances rarely if ever show an effect (12). However, their presence must tend to counteract positive growth factors and certainly hampers endeavors toward their identification. There is some evidence that alfalfa cut at the prebud stage is more desirable (11). This is indicated by data from Colorado (12), Table 6, showing that as carotene content increases, meals tend to be less growth-inhibiting at the 10% level.

Dehydrated alfalfa meal possesses three disadvantages as it is now made. One is its very low energy value, as shown in Table 7, using Fraps productive-energy calories, as recalculated by Titus (13). Thus, replacing 2.5% corn with dehydrated alfalfa meal reduces ration energy by 22 calories.

Another drawback is the bulk. Everyone is familiar with this and marked improvement has been made when alfalfa granules are used. Bulk at ordinary levels of usage is not so important in pelleted feeds.

A third disadvantage is the apparent presence of the growth inhibitor. This is not of great practical importance now since low caloric content is the first limiting factor. An authority in this field (14) has stated that it is probable that the high percentage of indigestible matter (44% in a meal with 17% fiber and 59% in one with 27% fiber) is much more important than the growth inhibitor in limiting the amount of dehydrated alfalfa meal used in poultry feeds.

Weighing the advantages versus the disadvantages, one can use the calculations in Table 8 to fit individual feeds. These data give the amounts per ton and current values for the several nutrients in which alfalfa is of outstanding value compared to most other common poultry feed ingredients. It is obvious that dehydrated alfalfa has definite economic values over its usual market cost, justifying its use in poultry feeds.

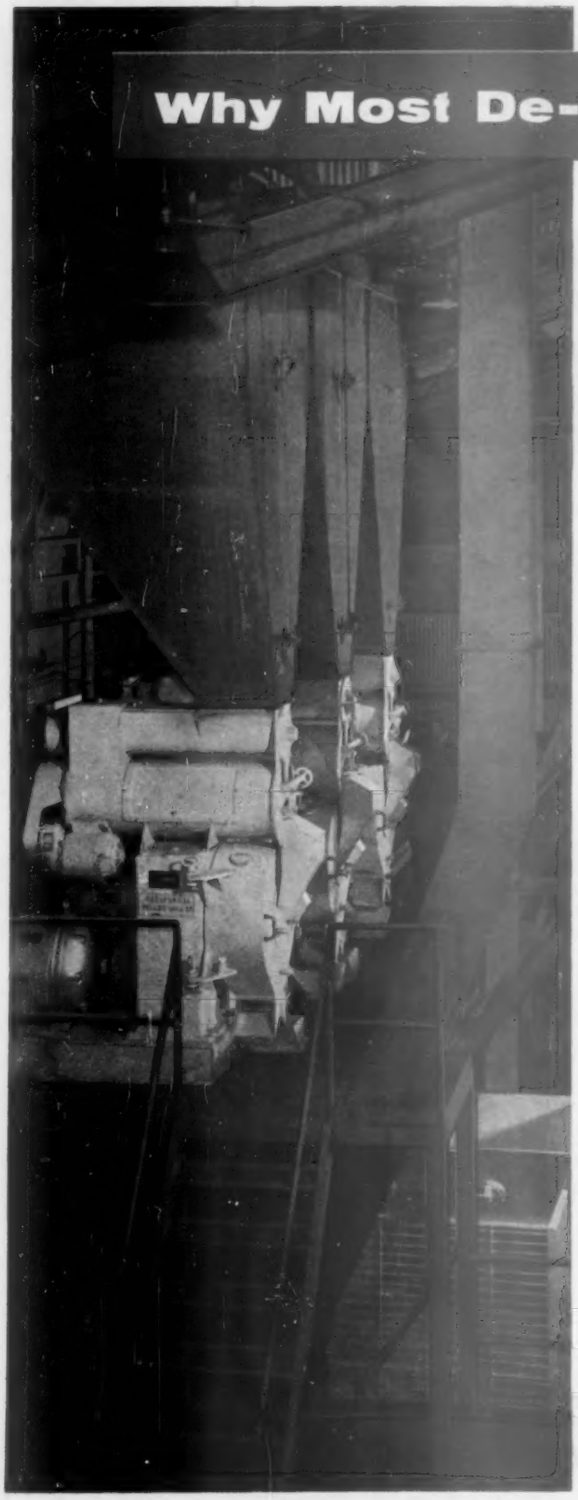
Another advantage is the awareness of the American Dehydrators Assn. of the problems of the feed manufacturer relating to dehydrated alfalfa meal and the policies of solving them, as evidenced in part by the ADA research program. It might be predicted that the feed industry will be using for its critical rations in the future a 20% or higher protein, 150,000-200,000 A meal or granule, treated with antioxidant and fat to insure maximum stability of carotene and xanthophylls, probably of vitamins E and K.

In regard to improved stability, the dehydration industry has several means for retarding the destruction of carotene. These methods also assist in the retention of xanthophylls, vitamins E and K, color and probably other factors. Storage in inert gas is most effective. Cold storage is good. Proper application of an acceptable antioxidant in oil slows down destruction, especially when adequate oil is thoroughly dispersed in the meal, preferably with heat and with pressure as in pelleting. This is partially demonstrated in Table 9, derived from data presented from Kansas (15). The feed industry is vitally interested in not only a high quality meal but in its relatively high stability of critical nutrients.

SWINE FEEDS

Most of what has been said about alfalfa in poultry rations applies also to swine, since swine and poultry have similar nutritional requirements

(Continued on page 49)



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Alfalfa Establishment and Management

By Hugo O. Graumann

EDITOR'S NOTE: Alfalfa production has increased steadily over the years, and now the crop is more important than ever because of its use, as dehydrated meal, in so many formula feeds. The accompanying article provides basic information on the planting and management of alfalfa. The author is a research agronomist with the field crops research branch, Agricultural Research Service, U.S. Department of Agriculture.

Alfalfa has a wide range of adaptation and when proper attention is given to soil and its fertility, preparation of seedbed, variety used, planting and meadow management, this crop can be expected to provide an abundance of good quality forage. Neglect of any one or more of these factors usually reduces the level of return from alfalfa.

Selection of Soil—Alfalfa does best on deep, fertile loam soils that are well drained. Because of the deep penetrating character of its root system, and the relatively high water requirement of alfalfa, shallow soils underlain with impervious subsoil, hardpan or bedrock are unsuited to the successful growth of this crop.

Deep sandy loam soils are satisfactory for this legume provided an adequate program of liming and fertilizer application is followed. Alfalfa seldom succeeds if the water table is near the surface of the soil, either constantly or on a fluctuating basis. Good surface and under-drainage are essential for this crop to thrive.

Soil Fertility—Alfalfa is a heavy user of calcium, phosphorus and potassium. For best growth, it requires an abundance of these and of other plant foods in available form.

In terms of lime requirements and fertility needs for alfalfa, most soils in the eastern one half of the U.S., the soils of the Pacific slope in northwestern U.S., and sandy soils wherever they occur are usually deficient in one or more of the elements calcium, phosphorus and potassium. If there is any doubt as to suitable soil fertility, before planting alfalfa soil samples from the fields in question should be submitted to the nearest soil testing service (county agent, state soil testing laboratory, or other agencies performing such services) for analysis. Should such tests show deficiencies, the appropriate materials to correct them should be applied at the recommended rates and thoroughly worked into the soil in advance of planting the alfalfa.

Extremely acid soils may require an initial application of two to three tons of limestone per acre. One application of limestone usually lasts several years. Overliming should be avoided as it constitutes extra cost and may cause certain mineral elements to become unavailable to alfalfa.

Phosphorus and Potash

Liberal applications of phosphorus and potash to deficient soils, both before seeding and annually thereafter, will in most cases yield profitable returns in terms of stand persistence and production of the alfalfa. The rates of application will vary from area to area.

A good guide to follow in determining needs of these elements is to bear in mind that alfalfa removes from the soil approximately 12 lb. of phosphoric acid and about 45 lb. of potash per ton of hay taken from the field. Thus, for a five-ton annual acre yield of hay the minimum per acre need of fertilizer materials for soils deficient in these minerals would be about 300 to 400 lb. of 20% superphosphate and approximately 500 to 600 lb. of 50% muriate of potash. Where other formulations or fertilizer materials are used proper adjustments on rates of application should be made.

In all cases, it is advisable to check with the local county agent or state agricultural experiment station on fertilizer formulations to use and rates at which they should be supplied.

Boron Needed Some Places

In certain isolated areas in the east, boron may have to be applied for successful alfalfa culture. Where needed annual applications of 15 to 20 lb. per acre of borax usually prove ample. Excessive boron may prove injurious, so only the amount recommended should be applied.

Alfalfa also requires large amounts of nitrogen. This crop, like most legumes, is able to get its supply of nitrogen from the soil air by means of the bacteria in the nodules on the roots. Many soils in the Great Plains and western states are naturally supplied with proper bacteria for inoculating alfalfa.

However, in the east, especially if alfalfa is being grown on a given field for the first time, it is essential that the nodule-forming bacteria be provided at the time of planting by inoculating the seed with artificial cultures of the bacteria that are available commercially.

Seedbed Preparation—The tender nature of young alfalfa plants requires that the soil be in excellent tilth, free of weeds, and have an abundance of moisture at sowing time, if maximum success in stand establishment is to be attained.

An ideal seedbed may be obtained by doing a good job of plowing, and subsequently using repeated tillage operations which will finely pulverize and compact both the subsurface and surface. Disking and harrowing at frequent intervals will help to settle the seedbed and also aid in the control of weeds previous to planting. On some soils, the cultipacker may help in getting the soil to its desired firmness.

To avoid puddling of the soil, the seedbed should never be worked when too wet. A loose seedbed oftentimes results in poor stand establishment.

Selection of Variety—There are available today a wide array of improved, high yielding alfalfa varieties. These have been bred to fit certain problem areas. Special consideration has been given to disease resistance and levels of winter resistance required for the areas in question. In many instances, it is possible to select one or more varieties that are especially adapted to certain climatic regions.

Farmers are advised to obtain for the planting of new alfalfa acreages good quality, genetically pure (certified) seed of a variety recommended for their area. This is good insurance and in general will pay greater dividends per unit of investment than any other expenditure associated with alfalfa culture.

Resistant Varieties

Bacterial wilt resistant varieties available are listed as follows, together with the areas of general adaptation: Ranger and Vernal—northern U.S.; Buffalo—central U.S.; Lahontan (this variety is also resistant to stem nematode)—irrigated, stem-nematode infested valleys in Nevada and California, and Caliverde (this variety is also resistant to common leaf and downy mildew)—California.

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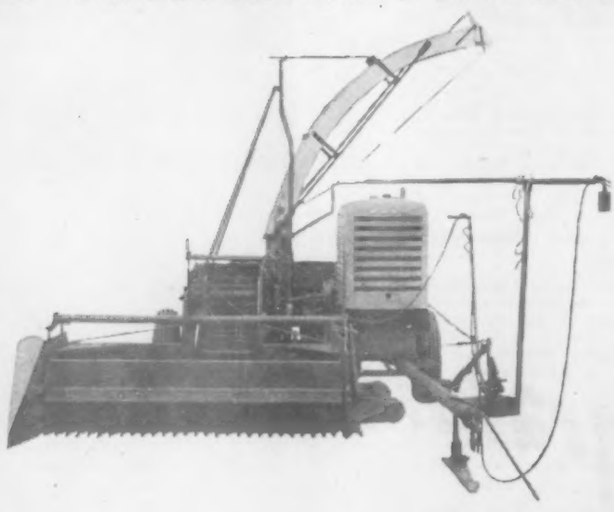

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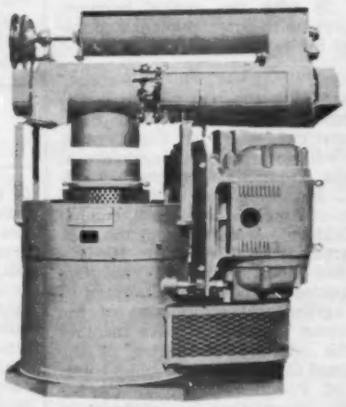

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eral regions of adaptation are: Atlantic—eastern U.S.; Narragansett—northeastern U.S.; Williamsburg—Virginia; Talent—Oregon, and African and Indian—southwestern U.S. In many instances some of older varieties still give suitable performance.

Planting—Alfalfa usually is seeded in spring or late summer. Spring seedings should be put in as early as possible to escape danger of killing by late spring freezes. Dates for such seedings will range from late February in southern U.S. to early May in some of the northern states.

Late summer seedings should be made sufficiently early to permit safe establishment of alfalfa against the winter conditions which follow. This might range from early August in the north to late October in the south. December plantings in isolated areas of the south, and July seedings under certain conditions in the north prove highly successful.

Less Weed Problem

Where soil moisture is adequate, late summer seedings have an advantage over spring plantings of less competition from weeds during establishment. They usually give full production the following year. Damage from harmful insects might be more troublesome in late summer seedings than in spring.

The rates of seeding vary from one region to another and range from approximately 6 to 30 lb. per acre for the U.S. The lowest rates are under dryland conditions in the west. In the central and northern Great Plains region, recommended rates are from 10 to 15 lb. per acre. The highest rates used are in the southeastern U.S.

The seed may be drilled or it may be broadcast on the surface and covered by the use of a cult packer, harrow or brush drag. The depth of planting should not exceed one half inch for most soils. Best results are obtained when the seed is placed in firm contact with moist soil.

The use of nurse crops with alfalfa during establishment may be desirable on sandy soils that are subject to blowing, and under irrigation.

Meadow Management—Alfalfa must be kept in a healthy, vigorous condition to be most productive. This requires the use of cutting schedules which permit the plants to manufacture and store in their roots and crowns the foods needed to support new growth following harvest.

In general, as new growth begins there is a lowering of food reserves in the roots and crown. This drainage of reserves continues for two to three weeks. About that time the growth is sufficient to manufacture the food needed for continued development and within a few days it will produce in excess of the plant's immediate needs. These excesses are restored to the roots at a relatively rapid rate. Storage up to the original level is accomplished about the time the growth reaches the early bloom stage.

In northern regions occasional harvesting in prebloom stages will not prove too detrimental provided intervening crops are permitted to develop to the bloom stage. In the south, prebloom cutting seems to be more detrimental.

In all areas careful fall management is important to the storage of reserve food in quantities that will permit the plant to withstand the rigors of winter with minimum damage.

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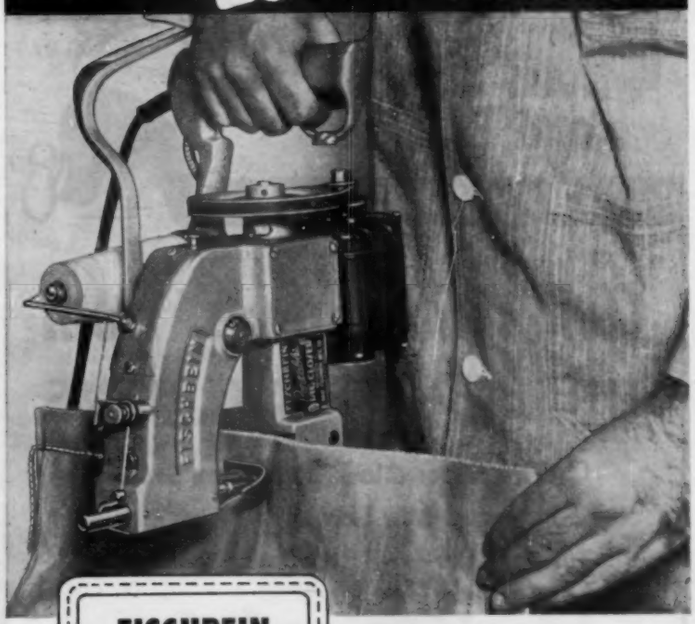

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PRODUCTION UP

(Continued from page 1a)

July was the peak production month with 236,500 tons coming from the dehydrated alfalfa plants. But June was not far behind with a total of 230,000 tons.

Suncured alfalfa meal production has fallen off. For the April-November period in 1955 the total was 119,200 tons compared with 150,400 tons a year earlier.

Stocks Up

Stocks of dehydrated alfalfa meal at producing plants on Nov. 30, according to USDA, totaled 423,600 tons, compared with 465,400 tons a month earlier and 332,900 tons a year earlier.

Here are tonnage figures on the production of dehydrated alfalfa meal for the months from April through November, 1955:

November	22,100*
October	100,100
September	128,900
August	193,300
July	236,500
June	230,000
May	145,300
April	32,000
Totals	1,088,200

*Preliminary.

State-by-state production figures, as reported by USDA, show that for the April-November period, Nebraska was way out in front, producing 380,500 tons, up considerably from the 312,800 tons produced in that period a year earlier. Here are the comparative USDA figures for the April-November periods in 1954 and in 1955:

States—	1954	1955
Arizona	11,400	4,200
Arkansas	5,000	13,900
California	91,400	81,000
Colorado	99,500	102,800
Idaho	**	**
Iowa	21,000	30,400
Kansas	150,800	169,900
Michigan	11,500	19,000
Minnesota	13,200	14,700
Missouri	49,400	68,500
Nebraska	312,800	380,500
New Mexico	8,700	8,800
Ohio	67,100	65,700
Oklahoma	16,700	13,300
Pennsylvania	23,400	23,900
Texas	39,400	32,000
Illinois, Indiana, Wisconsin	16,200	19,500
North & South Dakota	8,700	8,900
Washington & Utah	9,600	9,700
Other states	18,900	16,500
Total	977,700	1,088,200

**Data for small production states and in states where less than four companies operate are not shown separately.

C. M. SAUNDERS' HORSES DIE IN FIRE

TOLEDO — Nine harness race horses were burned to death Jan. 7 in a barn fire at the farm of C. M. Saunders, one of Ohio's largest harness racers. The loss was estimated at between $125,000 and $175,000. Among the horses which perished were Lightning Hanover and De-Haven. Mr. Saunders is president of Saunders Mills, Inc., Toledo alfalfa dehydrators.

ALFALFA ADDS NITROGEN

FT. COLLINS, COLO. — Colorado A&M College scientists estimate that alfalfa each year contributes nearly $14 million worth of active nitrogen to the state's crops and soils through symbiotic fixation.

ADA CONVENTION STARTS JAN. 25

(Continued from page 1a)

the A. B. Caple Co., Toledo, Ohio; J. D. Cole, Cole Grain Co., Muskogee, Okla.; W. A. Donnelly, Cerophyl Laboratories, Inc., Lawrence, Kansas; Loyd M. Faris, the W. J. Small Co., division Archer-Daniels-Midland Co., Kansas City, Mo.; Clifford S. Green, Green Products Co., Conrad, Iowa; Charles E. Hurst, Evergreen Farms, Inc., Raymondville, Texas; W. K. Jones, Northern Drying Co., Olivia, Minn.; Thomas J. Mateer, Nebraska Farm Products, Ltd., Cozad, Neb.; Floyd McKennon, Snohomish, Wash.; Kenneth Morrison, Morrison & Quirk, Hastings, Neb.; Robert Pharo, Keystone Dehydrating Co., Nazareth, Pa.

Also meeting the first day of the convention will be the Alfalfa Research Council. With Dr. L. E. Card, head of the department of animal science, University of Illinois, Urbana, presiding, the council will hear about current ADA-financed research projects and proposed projects.

The general membership of the ADA will be in action at the Jan. 26 session of the convention with entertainment and recreation dominating the schedule. A mixed golf tournament at the Tijuana Country Club will open the day. And for those who don't care to golf, a morning tour of Balboa Park is scheduled. A boat excursion of the harbor is planned for the afternoon and a "Circus Party" for the evening.

After a full day's program Jan. 27, the convention will adjourn for evening jai alai games in Tijuana. At the luncheon that day, diners will view California fashions. The convention will conclude the evening of Jan. 28 with the annual banquet, complete with entertainment and followed by dancing.

Outstanding Speakers

Headlining the program is the chairman of the board of the Bank of America, Jesse Tapp, Los Angeles, who will interpret the agricultural outlook from the economic standpoint. Mr. Tapp has been with the Bank of America since 1939, coming to California from posts in the U.S. Department of Agriculture. He is a member of the general executive committee of the bank, chairman of the agricultural commission of the American Bankers Assn., a member of the advisory committee of the National Cotton Council, and a member of President Eisenhower's advisory committee on agricultural policy.

Other California representatives on the program are Dr. Varden Fuller, associate professor of agricultural economics, University of California, Berkeley, who will talk on "The Race Between Population and Food Supply," and Dr. H. T. Reynolds of the Riverside Station of the University of California, who will discuss the spotted alfalfa aphid.

A leading research expert on ruminant feeding, Dr. W. M. Beeson, professor of animal husbandry, Purdue University, Lafayette, Ind., will talk on dehydrated alfalfa in cattle, sheep and swine rations.

John K. Westberg, sales manager of the International Minerals & Chemical Corp., Chicago, will discuss good salesmanship. "Tomorrow Unlimited" is the subject of an address to be given by E. G. Cherbonnier, feed consultant for the Grain & Feed Dealers National Assn., St. Louis. This will be a review of the ADA research program.

Panel Discussions

Other speakers will be representatives of the dehydrating industry. The concluding session of the convention will be a four-part panel discussion as follows: "Selling at the End of the Line," led by President Bert; "Improving the Product," Ralph Beerman, Beerman Bros. Dehy, Dakota City, Neb.; "Need for Gas Storage Facilities," Pickens West, National Alfalfa Dehydrating & Milling Co., Lamar, Colo., and "Costs and a Shorter Work Week," L. J. Schiller, Hayward, Inc., Oak Harbor, Ohio.

Mr. Bert and Mr. Chrisman will both report to the membership on ADA activity during the year.

Raymond E. Bert

ADA PRESIDENT — Raymond E. Bert, Bert & Wetta, Maize, Kansas, will conduct opening sessions of the American Dehydrators Assn. convention in his capacity as president of the organization. He will give his year-end address the morning of Jan. 27.

GAS STORAGE

(Continued from page 1a)

of about two to one, Mr. Chrisman estimates, so that the storage facilities represent the equivalent of approximately 620,000 tons of standard guaranteed meal of 100,000 A units. In addition to this blended product, there is also a normal summer production of high A meal by producers who do not use such storage and who sell directly to the feed manufacturer or other users during that period.

On the basis of a total annual production of around 1,000,000 tons of dehydrated alfalfa meal per year, the dehydrating industry is now in a position to produce about 70% of its total output as a standardized 100,000 A product.

Following is a table which shows the location and tonnage size of gas storage facilities by states according to current records.

State—	1954	1955	1956
Kansas	44,500	67,500	76,750
Colorado	1,610	2,310	10,750
Nebraska	72,400	85,320	97,000
Ohio	2,400	7,400	8,000
Iowa	....	5,000	5,000
Indiana	....	1,200	2,500
Minnesota	....	....	3,000
Missouri	....	....	2,000
Oklahoma	....	....	600
	120,910	169,230	205,600

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UNIDENTIFIED FACTORS

(Continued from page 9a)

grasses and legumes contain estrogenic activity (Gomez 1942, Legg et al. 1950, Dohan et al. 1951, Cheng et al. 1950, and others). Burroughs et al. (1954) observed that diethylstilbestrol in the diet of steers produced a marked improvement in growth and feed conversion. In addition, Hale and associates (1955) found that the feeding of diethylstilbestrol increased rates of gains in lambs approximately 22% over the controls. It would thus appear that a part of the beneficial effect from the use of dehydrated alfalfa and grasses in rations for cattle and lambs might be due to the presence of estrogenic substances in such materials.

Braude (1947) reported an increase in rate of growth and feed efficiency in pigs which had received both diethylstilbestrol and iodinated protein. On the other hand, in general, diethylstilbestrol has not been found to increase rate of gain when fed to swine (Winchester 1953).

Similarly, estrogenic compounds mixed in the feed in moderate dosages for chickens and turkeys have had no effect, on the average, on rate of growth in growing birds (Lorenz 1953). These results suggest that the unidentified growth factor activity of alfalfa and grasses for swine and poultry is not due to substances having estrogenic activity.

NATURE OF THE UNIDENTIFIED FACTOR(S) PRESENT IN GREEN FORAGES—It recently has been shown that a portion of the unidentified growth factor activity of certain crude feeding supplements for chicks is due to an inorganic factor(s). This has been found to be the case for a mixture of five sources of unidentified factors and for distillers dried solubles (Morrison et al. 1955 and Morrison 1955), dried whey and dried distillers solubles (Couch et al. 1955 and Reid et al. 1955), and fish meal (Tamimie 1955). On the basis of these reports the question arises as to the nature of the factor(s) present in alfalfa and grasses.

In the work reported by Morrison et al. (1955) and Morrison (1955), while grass juice was one of the mixture of unidentified sources used, no evidence was presented to suggest that the ash of this material contained an unidentified factor(s) for the chick. Furthermore, many reports have shown that the unidentified chick and poult growth factor(s) present in alfalfa and grasses is destroyed by heat (Kohler and Graham 1951, Scott 1951a, and others). In addition, Fisher et al. (1954) observed a marked growth response when 5% dehydrated alfalfa was added to a chick diet, while the ash equivalent to 5% alfalfa exerted no influence on growth of the chicks.

It thus seems apparent that the unidentified factor(s) in alfalfa and grass, which is required for the growth of chicks and poults, is organic in nature.

Possible Factor for Ruminants

Burroughs et al. (1950) and Klosterman et al. (1953) found that alfalfa ash improved the utilization of poor quality roughage by cattle. Swift and associates (1952) reported that alfalfa ash increased the digestibility of the energy of corn cobs by sheep.

The results of these studies indicated the possibility of the presence in alfalfa of an unknown inorganic factor(s) necessary for optimum functioning of the rumen microflora. However, in work by Chappel et al. (1952), reconstituted ash compounded to simulate alfalfa ash also improved the utilization, by sheep, of a ration high in corn cobs. Similarly, the utilization of all ration components was found to be improved when either alfalfa ash or "synthetic" alfalfa ash was included in a semi-purified sheep ration high in cottonseed hulls (Tillman et al. 1954).

The authors suggest that alfalfa ash may have supplied one or more inorganic elements which were low in the basal diet. Other factors such as total ash, anion-cation balance, buffering effect and balance of inorganic elements are also possibly involved.

On the basis of work with sheep it would therefore not seem necessary to propose the existence of an unknown inorganic factor(s) in alfalfa which is necessary for rumen digestion. On the other hand, the possible existence of such a factor(s) for sheep and cattle does not appear to have been completely ruled out.

SUMMARY — Evidence indicates that the unidentified factor(s) present in forage juice and required in the nutrition of rats and guinea pigs is the same as the factor(s) which is needed for the normal growth of chicks, poults and pigs. A factor(s) with similar distribution and properties appears to be necessary for the normal reproductive performance of chickens, turkeys and swine. Whether a single factor is involved for all species and for all productive purposes is not clear.

While the activity is partially destroyed by dehydration there appears to be a significant amount of the factor(s) present in certain dehydrated alfalfa and cereal grass meals. Forage juice preparations are more consistently potent sources of the activity than dehydrated products!

Antibiotics have been shown to exert a sparing effect on the requirement of the factor(s) for growth in chicks and poults. However, for maximum growth and feed efficiency it would seem necessary to include both an antibiotic and a source of the factor(s) in alfalfa and grass in diets for such birds. The factor(s) is carried over from the hen, through the egg, to the chick or poult. Nevertheless, to obtain optimum hatchability and growth of the offspring it would appear advisable to include a source of the factor(s) in both breeder and starting diets. The requirement of the poult for the factor(s) appears considerably higher than that of the chick. Gestating and lactating sows also appear to require a relatively high level of the factor(s) in their diets.

The factor(s) in alfalfa and grass appears to be distinct from the unidentified factors present in fish meal, fish solubles, liver meal, dried whey, distillers dried solubles and certain fermentation products. Milk by-products produced from cows on pasture contain good concentrations of the factor(s) but milk by-products, in general, appear not to be reliable sources. Certain dried brewers yeast samples also contain fair concentrations but not all dried brewers yeasts have shown activity.

Studies on the relationship of the

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unidentified factor activity of green forages and thioctic acid would be of interest. The activity of the alfalfa and grass factor(s) for poultry and swine would not appear to be related to the estrogenic activity of green plants. The unidentified factor(s) of alfalfa and grass required by swine and poultry is organic in nature.

Dehydrated alfalfa has proven extremely beneficial in high-roughage rations for cattle and sheep. Many of these effects may be explained on the basis of the known nutrients present in alfalfa meal and further evidence appears to be necessary in order to postulate the presence of an unknown factor in alfalfa of importance to these species. In alfalfa and grass assay work with cattle and sheep it would appear advisable to take into account the estrogenic activity of the products under study.

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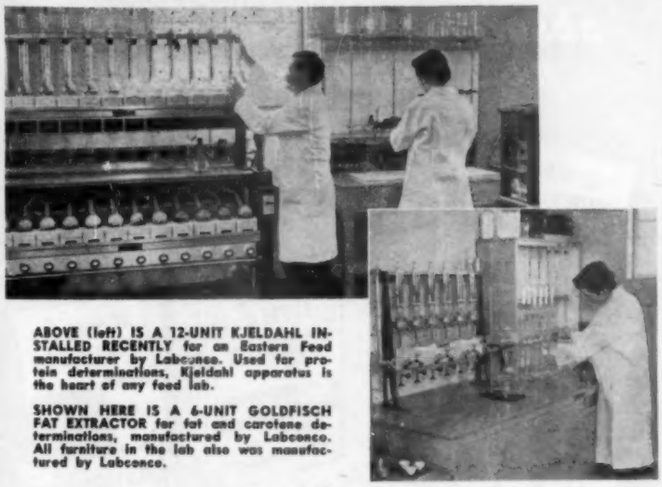

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Virginia Nutrition Topics Announced

ROANOKE, VA.—The ninth annual nutrition school for feed manufacturers, dealers and salesmen will be co-sponsored here Feb. 22-23 by Virginia Polytechnic Institute, the Virginia State Feed Assn., the Virginia State Department of Agriculture and the nutrition council of the American Feed Manufacturers Assn. The school will be at the Hotel Roanoke.

Discussions will be heard on animal fats in feeds, poultry rations, the meat type hog, energy values and medicated feeds.

Highlights of nutrition research at VPI will be presented by several university staff members at 10 a.m. Feb. 22. The Feb. 22 afternoon program will include talks on, "The Use of Animal Fats in Feeds for Cattle, Swine and Poultry," by Dr. B. S. Schweigert, American Meat Institute Foundation; "What About the Ratio of Protein to Energy in Poultry Rations," by James C. Fritz, Dawe's Laboratories, Inc., and "Feeding in the Production of the Meat Type Hog," Dr. R. F. Kelly, animal husbandry department, VPI.

The Feb. 23 program will include talks on, "Energy Value of Feeds," by Dr. C. F. Huffman, Michigan State University; "Feeding Milking Cows," Dr. M. F. Ellmore, VPI; "Medicated Feeds and the Feed Control Program," C. F. Bruce, supervisor, feed control programs, Virginia Department of Agriculture; "Arsenicals in the Feeds of Cattle, Swine and Poultry," Dr. D. V. Frost, Abbott Laboratories, and "Non-Protein Nitrogen as a Feed Ingredient," Dr. D. G. Green, Nitrogen Division, Allied Chemical & Dye Corp.

James W. Boehling, F. H. Boehling Co., Richmond, president, Virginia State Feed Assn., will preside at the Feb. 22 banquet program which will begin at 6:30 p.m. The main speaker that evening will be W. T. Diamond, secretary, American Feed Manufacturers Assn.

Chairman of the nutrition school committee is William G. Ritchie, J. S. Ritchie & Sons, Inc., Petersburg, Va.

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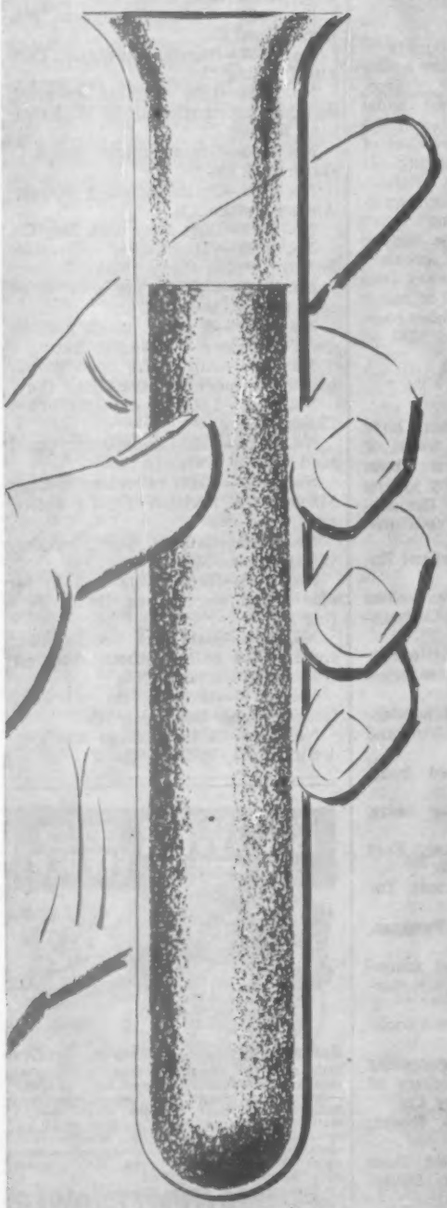

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Design, engineering, construction and initial operation of process industries by the Chemical Plants Division of the Blaw-Knox Co. are outlined in a new catalog, entitled "Process Plants by Blaw-Knox." The catalog is illustrated with photographs of major projects. Subject matter of the 20-page publication covers general and industrial chemicals, fine chemicals, high and low temperatures processes, fats and oils and plant rehabilitation and modernization. A copy of the catalog, Bulletin No. 2514, is available if you will check No. 6364 on the coupon and mail it to this publication.

No. 5380—Booklet on Salesmen

How the modern salesman works, what he does, and why, is portrayed in a 32-page booklet entitled "The Salesman Story" published by the Du Pont Company. It illustrates the vital function performed by the nation's five million salesmen and the vast sales effort that employs, directly or indirectly, perhaps 15 million men and women. It relates how the old-time drummer passed out of the scene to make way for men who, by their selling, create new industries and new products that raise the standard of living for all. "The modern industrial salesman is a professional. Glad-handing and back-slapping are not his basic attributes," the documented booklet reports. The "new kind of salesman" must often be part scientist, part economist, or specialist in other fields. "He is mature, in experience and know-how, before he tries to sell." The booklet is available by checking No. 5380 on the coupon and dropping it in the mail.

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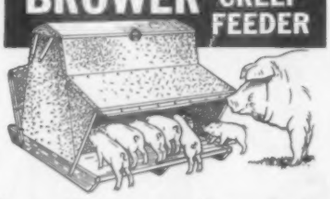

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ALFALFA MEAL IN FORMULA FEEDS

(Continued from page 24a)

and inability to handle or digest much fibrous or bulky feed. This is true particularly for baby pigs and growing-fattening hogs. During this period, rapid growth and high feed efficiency generally limit the amounts of alfalfa meal in the ration to those used for poultry. Alfalfa is a useful ingredient in these rations for the same reason as it is for poultry feeds.

The maximum amounts of dehydrated alfalfa meal must be limited for the same reason. This is exemplified by recent tests at Illinois (16) in which 15% and 30% of alfalfa meal was found to be excessive for growing-fattening hogs. This was ascribed to lowered total digestible nutrients content and consumption of the ration. Work at the Iowa station has demonstrated that dehydrated alfalfa meal is unpalatable to young pigs. Further evidence has recently been presented by the Minnesota station (17), as given in Table 10. This work consisted of three trials on pigs three to eight weeks of age. Dustiness of the alfalfa was noted as a contributing factor, probably.

Usually alfalfa is omitted or severely restricted in pre-creep feeds and starters where palatability is so essential to early acceptance of feed. However, the writer feels that the limited use of a 20% or higher protein, 150,000-200,000 A, oiled meal or granule may eventually prove to be a worthwhile addition in such rations because of the contributions of carotene, vitamins E and K, folic acid and unidentified growth factors. The use of 2.5-5% of regular dehydrated alfalfa meal in growing-fattening rations has long been successfully utilized to provide an important proportion of the necessary vitamins. The use of 10-15% in sow and pig supplements and in hog supplements is well established and helps to provide a very important percentage of necessary accessory factors and even protein.

There is ample evidence that liberal amounts of dehydrated alfalfa meal are beneficial in gestation-lactation rations for swine. Larger and thriftier litters have been reported repeatedly. Early evidence on this point from the Iowa station (18) is given in Table 11. In gestation rations as much as 15-25% of dehydrated alfalfa meal is used. Such amounts not only contribute materially in vitamins, minerals and proteins, but also sufficient bulk to help avoid excessive fatness.

It is anticipated that the use of dehydrated alfalfa meal in swine rations will come under more critical evaluations and that it will continue to play an important role in swine feeds of all kinds.

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amply demonstrated that the mineral composition of alfalfa has a definite stimulating effect on rumen microorganisms and that ruminants make better gains on rations with low quality roughage when alfalfa or alfalfa ash is incorporated in the ration.

While molasses and its ash have the same property, dehydrated alfalfa meal has the added superiority in protein, calcium, carotene and estrogenic substances. The other vitamin values may often be of critical importance. For example, vitamin E deficiency is often a serious problem in cattle and sheep (white muscle disease and stiff lamb disease). It is suspected that the water soluble vitamins may be beneficial in some instances. Some of these microorganisms require water soluble vitamins in their metabolic processes. These are normally supplied by other rumen microorganisms and it is conceivable that there are cases where the latter are not in normal numbers or activity.

The application of these findings is exemplified by the now famous Purdue Supplement A and Iowa Supplements 3 and 4. Workers at these stations discovered that dehydrated alfalfa meal at the 15-25% level in such formulas contributes to their efficiency very materially. Examples of these formulas are shown in Table 12.

The fact that dehydrated alfalfa meal can serve as the sole protein supplement for ruminants has been demonstrated by research and practice. Normally, dehydrated alfalfa meal is too expensive for this purpose alone, but when properly used to take advantage of its other contributions, it has proven economically sound.

For example, one cattle feeder now has his own dehydrator, pelleting equipment and inert gas storage tanks. As much as 4 lb. of dehydrated pellets are fed daily to fattening steers, but usually this is limited to 2 lb. It may be necessary to omit even this small amount during the last few weeks before marketing in order to avoid excessively yellow carcass fat. This particular rancher feels that he gets 3 lb. of high quality dehydrated alfalfa meal where he used to reap only 2 lb. of suncured hay from the same land.

Benefits Provided

While a number of experiments with ruminants have demonstrated that nearly but not quite all of the roughage requirements can be met with dehydrated alfalfa in the proper physical form, such as pellets or chops, this practice is not economically sound at the present time. As previously indicated, research has amply shown that the judicious use of dehydrated alfalfa in the supple-

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ment or concentrate, fed with low or medium quality hay or other roughage will supply noticeable benefits. These benefits show up in all stages—reproduction, lactation, growth, fattening and even wool production.

At the present time, surveys indicate that a high percentage of the forages produced on farms and ranches is not of highest quality. An example of this is the paper presented at the Michigan Feed & Grain Conference last year on the economics of high quality forage in the dairy ration (19). It is pointed out that when excellent quality alfalfa or alfalfa-grass forages are fed liberally the protein and TDN requirements for cows producing 40-50 lb. of milk daily can be met by supplementing this forage with farm grown grains only. Data in this paper also indicates that there is a gradual improvement in recent years in the quality of such forage.

This has implications obvious to the feed manufacturer. However, the percentage of excellent quality forage is still generally low, justifying appropriate utilization of appropriate supplements. It is felt that there is a good field open here for the use of dehydrated alfalfa.

As further evidence to substantiate this opinion, reference is made to the research at the Storrs (Conn.) Agricultural Experiment Station on the utilization of dehydrated alfalfa for dairy calves and for dairy cattle. An excellent comprehensive review of this subject was presented by the Storrs workers in the Jan. 22, 1955, issue of Feedstuffs (20). Copies of this have been distributed by the ADA. Every feed manufacturer should carefully study this paper with special reference to the tables showing recommended levels of dehydrated alfalfa products in different types of dairy rations. This research has amply demonstrated the beneficial results on lactation and growth in the dairy animal. Further details on the use of dehydrated alfalfa meal in dairy starting rations is presented in the December, 1955, issue of the Eastern Feed Merchant (21).

SUMMARY

While there has been a trend to reduce the amount of dehydrated alfalfa in poultry feeds and in pig creep feeds and starters, owing to its low energy content, bulk, and lack of palatability, this feed ingredient continues to be an economical source in such feeds of vitamin A activity, xanthophyll (for poultry), vitamins E and K, and folic acid. Evidence for unidentified growth factors for these species exists. These vitamin values are receiving renewed attention in the modern high energy rations.

One apparent method of overcoming the disadvantages found in dehydrated alfalfa is for the feed industry to demand from the dehydrator a product with a higher concentration of the leafy portion, possibly a product with 20% or better protein, less than 20% fiber, and 150,000-200,000 units of vitamin A per pound. It is anticipated that the dehydration industry will continue to expand its utilization of improved processing for higher quality product and of improved methods of treatment with antioxidant and oil and of storage to get maximum preservation of the nutritional values.

Dehydrated alfalfa has demonstrated unique qualities to justify its use in practically all types of ruminant rations. It provides not only valuable protein and calcium and vitamin A, but also vitamin E and unidentified factors both mineral and organic required for optimum functioning of rumen microorganisms. Its

(Continued on page 54)

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See for yourself what practical farm and experiment station tests have proven—Pro-Gen is a safe, low cost, effective growth stimulant that pays for itself many times over. Test Pro-Gen in your own feeds on scouring or unthrifty pigs. We'll be glad to furnish trial amounts at no charge.

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MIDWEST CONVENTION PLANNERS—The planning committee for the 12th annual convention of the Midwest Feed Manufacturers Assn. got together recently to put the finishing touches on the program for the convention in the Muehlebach Hotel, Kansas City, Mo., Feb. 26-28. All Kansas Citians, they are, from left to right, Robert Greenlee, Nutrena Mills, Inc.; Martin Newell, Feedstuffs; Bruce Varney, Agri-Tech, Inc.; Lloyd Larson, MFMA executive vice president; Pat Waters, General Mills, Inc., and Oscar Straube, Pay Way Feed Mills, Inc., chairman of the convention. "Trends in the Feed Industry" is the theme of the convention.

VyLACTOS CONFERENCE—A three-day conference of VyLactos Laboratories sales personnel was held recently at the company's offices in Des Moines. Sales and advertising plans for 1956 were presented by Dean F. Foster, sales manager, shown at left. Others attending the conference are, from left to right: Sam Fleming, Duane Morrow, Clint Shaffer, Eugene Coats, and John Goeders, all district sales supervisors, and Dr. Garrish Severson, director of nutrition.

SYNTHETIC LAMB COAT—A vinyl-plastic Lamcoat, designed to protect newborn lambs from inclement weather, has been made available to sheepmen in all parts of the country by the California Wool Growers Assn. of San Francisco. The snug-fitting slip-on Lamcoat has an elastic belly-band and breakaway seams and can be shed if the coat is caught on brush or becomes too tight. Sue Fetz, Miss San Francisco of 1953, here demonstrates how neatly a Lamcoat fits. Weather won't wait for lambing and many unprotected lambs die of exposure a few hours after their birth.

☆

Camera Views of the News

☆

20 YEARS—George W. Aldous, serviceman with Dr. Salsbury's Laboratories of Charles City, Iowa, was honored for 20 years of service at the recent annual sales meeting in Mason City, Iowa. Here Mr. Aldous, who serves the state of Minnesota for the company, receives a 20-year gold service pin from Dr. J. E. Salsbury, president, in ceremonies climaxing the banquet at the sales meeting.

J. T. Cleland Tom A. Eadon, Jr.

APPOINTED — The appointments of J. T. Cleland as sales manager of the Dallas branch, and of Tom A. Eadon, Jr., as sales manager of the Philadelphia branch have been announced by W. N. Brock, vice president and general manager of the Chase Bag Co. Mr. Cleland joined Chase in 1937 as a salesman in the west Texas area. He later served as sales representative in the Dallas branch. Mr. Eadon has been a sales representative with the Philadelphia branch since 1948, covering territories in New Jersey, Pennsylvania, Delaware, Maryland, Virginia and Washington, D.C. He is a graduate of the University of Pennsylvania.

R. W. Nelson A. R. French

DISTRICT SUPERVISOR—R. W. Nelson of Des Moines, Iowa, right, receives congratulations from A. R. French, district manager of the chemical department for McKesson & Robbins, Inc., New York, on his appointment as district supervisor of feed supplement sales. Mr. Nelson, with McKesson chemical for over five years, will supervise sales to feed manufacturers in the Dakotas, Iowa, Kansas, Minnesota, northern Missouri and Nebraska. He received his bachelor's degree and did graduate work in chemistry and biology at Drake University, Des Moines, where he will be headquartered.

25TH ANNIVERSARY — The annual employee dinner and party held by Whitmoyer Laboratories, Inc., Myerstown, Pa., had special significance this year because it also served as the 25th birthday dinner for the firm. The year, 1956, marks the firm's silver anniversary. In the photo, C. W. Whitmoyer, president and founder of the company, is preparing to serve the first slice of the candle-lit cake. The company's board of directors surrounding him are (left to right): M. B. Gardner, vice president in charge of sales; M. J. DeMucchio, assistant secretary and assistant treasurer; T. W. Balkcom, vice president; C. W. Whitmoyer, president; R. W. Henry, treasurer, and J. G. Wandell, secretary.

It Still Buys a Lot...

Time was when it would buy a juicy T-bone steak (with all the trimmings), a pair of overalls or fifty pounds of feed. But its buying power has been shrinking steadily for years, especially in animal nutrition . . . in *some* phases of nutrition, that is.

But even today, it's still possible to build 100 pounds of pork with a perfectly balanced ration carrying just *fifty cents' worth* of Borden's natural-source vitamin fortification; and, sometimes it's done for *less!*

Borden's vitamin supplements and formulas can help you and your dealers *get* and *hold* more hog feed business . . . they'll help your feeds do a *better* job . . . get hogs off to market *quicker* . . . and, at *record low* production costs!

The hog feeder is going to look long and hard at his production costs this year. If your hog feeds are Borden-fortified, he'll like what he sees!

A few minutes with your Borden representative will *prove* it to you —and you can prove to your hog feeders that fifty cents will *still* buy a lot.

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bachelor's degree and did graduate work in chemistry and biology at Drake University, Des Moines, where he will be headquartered.

president; C. W. Whitmoyer, president; R. W. Henry, treasurer, and J. G. Wandell, secretary.

proper use in ruminant feeds of all kinds will assure proper utilization of roughages and forages of average or below average nutritional value. Dehydrated alfalfa meal is thus an insurance factor.

Table 1

	Requirements	Dehy. 2.5%
Vitamin A, units	1200	2500
Riboflavin, mg.	1.3	0.2
Folic acid, mg.	.25	.10
Vitamin E units	5	1.5
Vitamin K, mg.	.18	.8

Table 2

Source	Mcg. per 100 ml. plasma Carotene	Vitamin A
Carotene in oil	58	14
Dehy. alf. meal	115	26
Carotene in oil	60	25
Dehy. alf. meal	240	38
Carotene in oil	70	36
Dehy. alf. meal	240	55

Table 3

Source	Mcg. Carotenoid per 100 sq. cm. skin —DPPD	+DPPD
2.5% dehy. alf.	17	20
5% dehy. alf.	27	41
2.5% dehy. alf. plus 30 y. corn	27	46
5% dehy. alf. plus 30 y. corn	36	68
2.5% dehy. alf. plus 60 y. corn	47	73

Table 4

Units per lb. feed	Units liver A per chick —DPPD	+DPPD
550	60	183
1100	191	417
2200	435	972

Table 5

Supplements	Fertility %	Hatchability %
None	67	67
E, 20 I.U. per lb.	82	81
2% fish oil	69	40
2% fish oil plus E	78	77
2% fish oil plus DPPD	73	76

Table 6

Rel. growth	Vitamin A per lb.	No. of samples
65- 74	95,000	3
75- 84	85,000	5
85- 89	100,000	10
90- 94	110,000	21
95- 99	125,000	31
100-105	140,000	17

Table 7

Feed	P.E. cal.	cc per lb.
Dehy. alf. meal, 17%	217	1120
Dehy. alf. meal, 20%	385	....
Flour middlings	756	1130
Soybean meal, 50%	790	660
Fish meal, 60%	941	640
Milo	1099	....
Corn	1105	660

Table 8

	Amount, ton	$
Vitamin A, units	200,000,000	20
Vitamin E, units	120,000	12
Vitamin K, gm.	70	4
Folic acid, gm.	8	8
Riboflavin, gm.	140	7
Xanthophylls, gm.	200	80

Table 9

Treatment	% carotene retention —AO	+AO
0.8-1.6% oil	46	59
0.8-1.6% oil plus heat	53	67
4% oil	59	73
4% oil plus heat	71	83

Table 10

	Daily gain lb.	Feed per lb. gain
Control	.73	2.12
20% rolled oats	.72	2.12
3% dehy. alf.	.59	2.08

Table 11

Treatment	Avg. pigs per litter Farrowed	Weaned
Plant protein basal	9.0	6.0
Plant protein basal plus 10% dehy. alf.	9.7	6.3
Plant and animal protein basal	9.6	6.5
Plant and animal protein basal plus 10% dehy. alf.	10.0	7.5

Table 12

Beef cattle supplement	Purdue	Iowa
Soybean meal	1300	950
Cane molasses	280	450
Dehy. alf.	280	450
Urea (262)	...	105
St. bone meal	104	65*
Salt	35*	...
10,000 A; 125 OD	1	...
Totals	2000	2020

*With cobalt.

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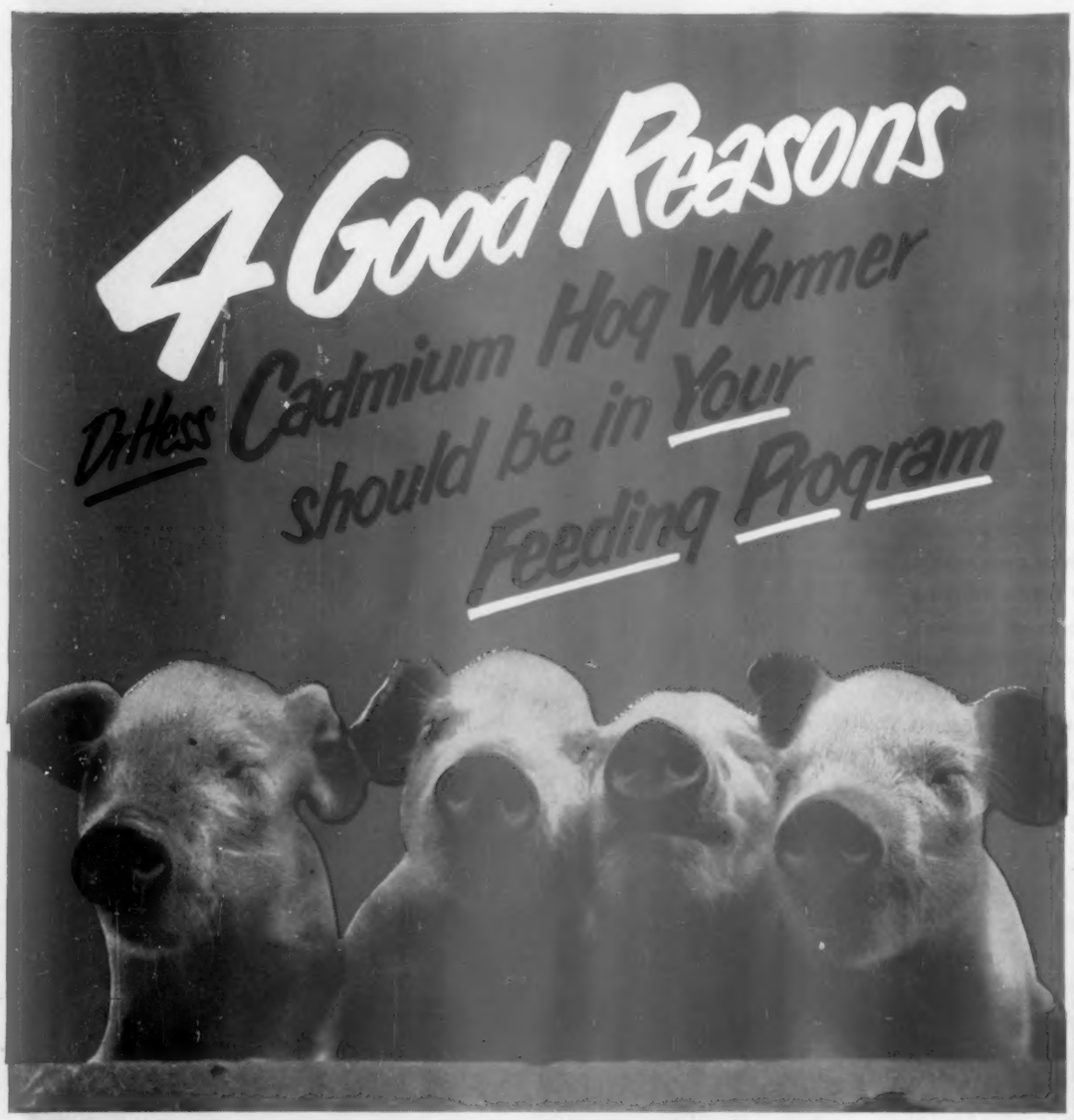

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Applying Research Results to Manufactured Poultry Feeds

By DR. RAYMOND T. PARKHURST

EDITOR'S NOTE: In the accompanying article, Dr. Raymond T. Parkhurst, director of nutrition and research for Lindsey-Robinson & Co., Roanoke, Va., shows that a "superior" feed, though costing more, gives the poultryman the most profit. He also reviews what's new in laying and breeding rations and points out that sound research is always needed before new developments are adopted as standard practices.

The successful feed man uses all the results of research he can to make his feeds better. There is so much new information being released in a course of a year, it is difficult, if not impossible, for most feed men to digest more than a small fraction of it.

Much of what a feed man reads or hears is either too technical for him to understand, or reported results are so conflicting that he is confused. Unfortunately, some conclusions are drawn on data that is either insufficient or has too limited application for generalizations. Of necessity, therefore, a feed man has to pick and choose new information which applies to a particular problem. This may be a feed that is out of line in price, giving unsatisfactory results in some way or is just not as good as it should be in comparison to a competitor. It is the responsibility of the feed man to improve his product, not the feed control official. It is the job of the feed control official primarily to see that the products the feed man manufactures are up to the guarantees made for them.

These observations on applying research results to manufactured feeds are not intended to be in criticism of any source of nutritional information. They are intended to help guide someone somewhere in making better feeds.

Meeting Nutrient Requirements

Every feed man should use as a guide the nutrient requirements for poultry of the committee on animal nutrition of the Agricultural Board of the National Research Council and revise and enlarge on them as new information is available. The relation of one nutrient to another can be as important as the amount in the ration. Promiscuously varying nutrient values can adversely affect the results obtained with an otherwise good formula.

A feed is only as good as the quality of the ingredients that go into it, yet the emphasis is more and more on nutrients and less on ingredients. The statement made by Dr. George M. Briggs, chief nutritionist of the National Institute of Health at the 1955 Maryland Nutrition Conference for Feed Manufacturers, bears repeating here: "The final test of a ration will not be what ingredients it contains but what profit it gives to the producer."

The poultryman wants to know which feed will make him the most profit. In the case of a broiler grower, this usually means the highest margin over feed cost per bird or per 1,000 birds. Within agriculture, there is probably no other group which knows its cost of production in more detail than the broiler raisers. I believe the same principle of arriving at the value of a broiler ration can

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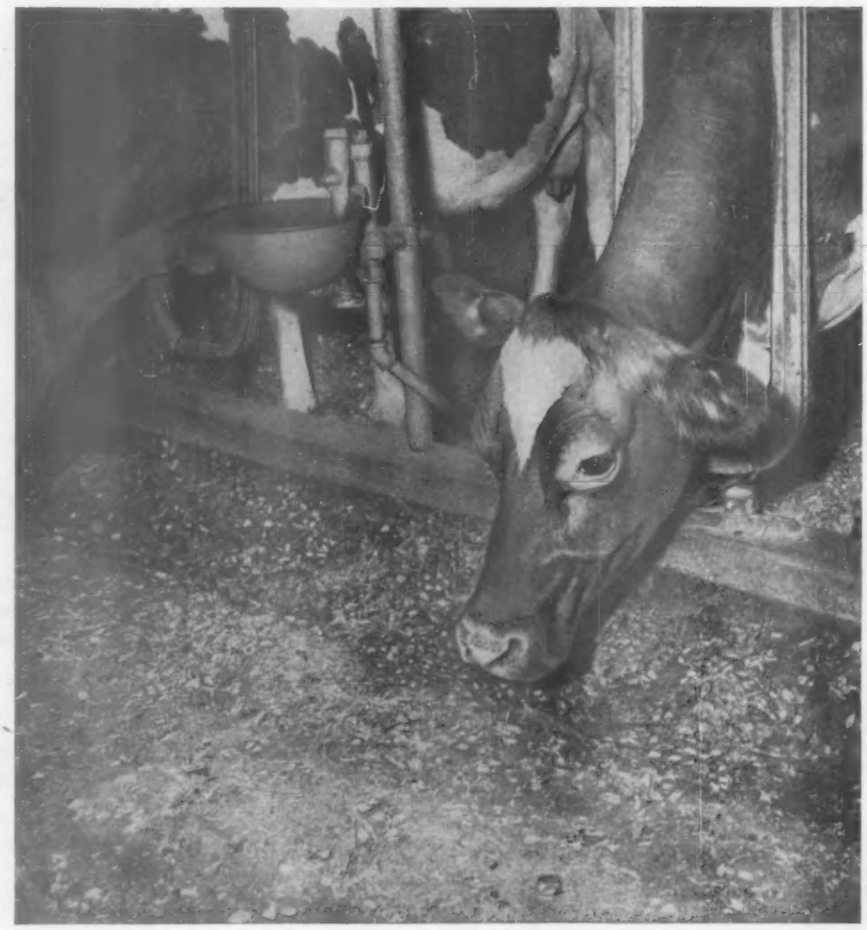

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be used as has been used for laying and breeding feeds.

The most important factor in the economics of laying rations is the rate of production. There can be no profits when layers use their feed primarily for maintaining body weight and keeping their body temperature normal, but lay few eggs.

The more eggs a flock lays, the smaller the maintenance cost is in proportion to the total cost. Feed requirements for maintenance vary greatly, depending upon the size of the layers.

The proof of good laying and breeding rations is in the results obtained. The most important factor in low production costs is a high rate of egg production.

Comparative Worth

How much more can a producer of market eggs afford to pay for a laying mash which, through research, has been formulated to give superior results?

Assuming an "average" commercial feed will average 50% yearly egg production, the daily production per 100 birds is 50 eggs or 4.16 dozen. By multiplying by the price per dozen at any given time, one gets the income per day. Of course, records must be kept on the flock. These will show the daily feed consumption per 100 hens. Dividing that by the number of dozen eggs produced per 100 hens will give the feed efficiency in terms of pounds of feed required per dozen eggs. The daily feed consumption in pounds times the cost of feed per pound will give the daily feed cost per 100 birds. If this figure is subtracted from the income, one gets the margin over feed cost. An example will help to illustrate how it works.

Assuming $88 for the feed cost per ton of an "average" feed, 48¢ a dozen as an average egg price, and 50% as the average yearly production on this "average" feed, here are the figures:

1. Daily production per 100 birds, 4.16 dozen eggs.
2. Daily income, $2.
3. Daily feed consumption (Leghorns), 25 lb.
4. Feed per dozen eggs, 6 lb.
5. Feed cost per dozen, 26½¢.
6. Daily feed cost per 100 birds—$1.10.
7. Margin per 100 per day over feed cost (income minus feed cost), 90¢.

A "superior" feed giving 56% production annually, on the other hand, would show these figures per 100 birds:

1. 4.66 dozen eggs per day.
2. Daily income, $2.24.
3. Daily feed consumption per 100, 23.3 lb.
4. Feed required per dozen eggs, 5 lb.

The "superior" feed obviously produces more income. But how much can the egg producer pay for the better feed? If we settle for the same profit over feed cost (income minus feed cost) of 90¢ that we got with the "average" feed, the daily feed cost of the "superior" feed could be as high as 5.75¢ per pound. That's $115 per ton, or $27 per ton higher than the "average" feed. Daily income minus margin over feed cost equals the amount per day which could be spent for a "superior" feed ($2.24 minus 90¢ equals $1.34; $1.34 divided by 23.3 equals 5.75¢ lb.).

Nutritional Factors

Research also has shown that any one of several nutritional factors, when added to a good "average" breeder, can increase the total hatchability of eggs by 6%. Many hatcheries pay a premium of 3¢ doz. for 75% hatchability, and 1¢ doz. for each per cent over 75.

Thus, a premium of 8¢ doz. can be gotten by increasing hatchability from 74% to 80%, which is possible by the addition of important nutritional factors.

If we assume a cost of $90 ton for an "average" breeder feed, which gives a hatchability of 74% of total eggs set, what is a "superior" feed worth that gives 80% hatch of total eggs?

To illustrate, we'll use an average yearly production of 56%, and assume that 80% of these are salable hatching eggs. Daily production per 100 hens then would be 3.73 doz.

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hatchable eggs. On the basis of 74% hatchability, this would give a daily income of $2.73 when the price is 73¢ a dozen. At the same number of eggs and the same price of eggs, 80% hatchability would give $3.02 because of the 8¢ doz. premium for the higher hatchability. Again, the "superior" ration has produced greater income.

Using the same cost and production figures which we used in the comparison of laying feeds, we find that the feed cost per day would be $1.05 for an "average" breeder feed. The profit over feed cost would be $1.67 per day. To get this same profit over feed cost with a "superior" breeder ration, we could pay $1.35 every day for feed. That comes out to 5.79¢ lb. for feed cost, or $116 per ton ($3.02 minus $1.67 equals $1.35; $1.35 divided by 23.3 equals 5.79¢ lb.). The "superior" breeder feed, then, is worth $26 ton more than the "average" breeder feed priced at $90 ton.

The returns we get from feeds that give superior results almost justify the relatively small price difference over an "average" feed.

What's New in Rations

There is nothing especially new in laying formulas that shows promise of increasing egg production or hatchability by 6%. Stabilized vitamin A, to a less extent vitamin D, and trace minerals that are compatible with vitamins have come into more general use in the past year. There have been new developments in vitamin K and E and in the use of antioxidants. At present, the general use of antibiotics, at either high or low levels in laying or breeding rations does not seem justified. Improvement has usually been confined to flocks giving poor production.

Vitamin K and the Hemorrhagic Syndrome—Especially in the presence of stress factors, such as vaccination, there can be a deficiency of vitamin K in practical rations. Symptoms of the hemorrhagic syndrome have been found in embryos and newly hatched chicks indicating a deficiency of vitamin K in the breeding ration is possible. The use of menadione, menadione sodium disulfite, or certain vitamin B_{12} antibiotic supplements in breeding and broiler rations, and possibly replacement rations, seems justified.

Arsenicals—As in the case of antibiotics, consistent results have not been obtained with the use of arsenicals in poultry rations. The general use of arsenicals in laying and breeding rations is not, at the present time, justified. Increases have been confined to poor producing flocks. The judicious use of arsenicals in broiler or replacement feeds, either with or without antibiotics, has proven economical. Some improvement has been observed by their use in replacement rations.

Vitamin E—In most rations, there is an adequate amount of vitamin E to meet the needs of usual production practices. The addition of alpha-tocopheryl acetate to the breeding ration and to the chick diet has prevented the trouble. The addition of some supplementary source of vitamin E seems justified in breeding rations and chick diets when encephalomalacia is a problem or as a safety factor in high energy rations containing fats. The minimum requirements of vitamin E are not known.

Diphenyl-p-phenylene diamine (DPPD)—The antioxidant, diphenyl-p-phenylene diamine (DPPD) has been found to be effective at the 0.0125% level in preventing encephalomalacia under certain conditions but not all. At this level, it has been found to increase vitamin A liver storage in chicks and apparently reduces the requirement of vitamin A for growth. Its use in broiler rations seems justified because, in addition, it enhances pigmentation.

The excellent results obtained with DPPD in preventing encephalomalacia has led to its use in laying and breeding rations. The addition of DPPD at the 0.0125% level (¼ lb. per ton) to 8 out of 10 formulas gave lower percentage of egg production in production-bred Reds from December, 1954, to June, 1955. Only in one formula did the addition seem justified on the basis of increase in egg production. This was also true for hatchability. With only one formula was the hatchability of fertile eggs materially improved. The decrease in hatchability was less than in egg production.

Pantothenic Acid—The addition of extra amounts of certain vitamins to certain formulas may do more harm than good. The proper amounts of nutrients and their relationship are important. When 1 milligram per pound was added to 8 out of 10 complete layer-breeder formulas, egg production was reduced. With only one formula was there an increase that approached importance. Hatchability was also less with 7 out of 10 formulas to which pantothenic acid (1 milligram per pound of diet) was added.

Energy/Protein Ratios in Laying and Breeding Rations — Under the conditions of an experiment in which production-bred Reds weighing about 5.5 lb. were fed five basic formulas from December to June, there seemed to be no very definite relationship between the energy content of the ration, the energy to protein ratios and either egg production or hatchability of fertile eggs.

Conclusion

It has not been possible to cover many new developments in the use of amino acids, hormones and new ingredients, such as poultry by-products, in poultry rations.

When a formula is giving good results, some caution should be used in changing it on the basis of new research and developments until the evidence is convincing. It should not be assumed that just because a new discovery is good for chicks that it is also good for layers and breeders. Sound research and nutritional knowledge are the basis of future developments in the feed industry.

VICTOR MYER DIES

KANSAS CITY—Victor Myer, 79, former president of the Blaker Milling Co., Pleasanton, Kansas, and the Blaker Lumber & Grain Co., Kansas City, died Jan. 7 in Kansas City.

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Wholesale Feedstuffs Price Index

INDEX NUMBERS OF WHOLESALE FEEDSTUFFS PRICES
BASE PERIOD 1935-39=100

Season	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Aver.
1955-56	194.4	186.0	188.3	....	....	....	....	....	....	....	....	....	....
1954-55	216.9	221.6	222.3	223.0	222.8	216.5	211.0	201.6	199.6	197.7	191.3	195.8	210.0
1953-54	201.3	203.6	205.3	204.8	209.0	208.1	206.4	205.8	229.6	242.0	237.3	219.3	224.1
1952-53	263.4	257.3	257.3	251.7	243.0	238.3	227.8	229.3	215.7	215.4	211.3	206.5	234.1
1951-52	268.9	269.0	274.6	277.1	274.0	272.0	279.4	277.4	275.6	270.9	292.6	283.4	261.8
1950-51	207.8	221.1	229.0	233.6	241.3	240.3	243.9	240.7	237.4	240.4	236.6	246.6	234.8
1949-50	213.5	209.7	214.3	206.7	202.9	212.4	221.8	237.3	227.8	251.2	227.5	213.6	219.3
1948-49	208.8	230.4	230.0	226.5	210.8	214.3	226.4	221.4	215.5	229.3	239.3	219.4	222.6
1947-48	283.0	283.1	301.9	313.7	281.6	272.6	275.3	271.6	277.1	259.4	220.1	221.7	271.8
1946-47	239.7	254.0	221.6	208.6	197.4	236.7	234.5	223.0	238.8	267.1	263.9	288.1	237.0

Compiled by Market News Branch, Grain Division, Agricultural Marketing Service, U.S. Department of Agriculture.

INDEX NUMBERS OF FEED GRAIN PRICES (CORN, OATS BARLEY AND GRAIN SORGHUMS), OCTOBER, 1935, TO SEPTEMBER, 1940=100

Season	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Aver.
1955-56	175.4	170.0	186.2	....	....	....	....	....	....	....	....	....	....
1954-55	221.4	216.2	216.6	213.8	211.0	205.4	208.1	214.3	212.9	209.3	192.7	185.1	204.9
1953-54	206.4	208.1	219.0	218.2	216.9	218.6	220.6	222.8	226.5	223.1	226.4	224.9	219.1
1952-53	228.2	223.6	223.6	227.4	218.8	221.6	221.4	226.3	218.7	221.0	224.4	223.9	224.7
1951-52	247.6	261.4	272.7	269.1	264.8	256.8	254.7	256.3	254.6	252.1	252.4	249.4	256.8
1950-51	207.6	219.9	232.0	240.3	250.3	245.8	247.4	248.8	236.8	240.8	241.8	243.1	237.6
1949-50	173.8	173.5	184.0	184.8	185.3	190.6	201.8	211.3	211.3	218.6	211.6	210.9	196.4
1948-49	207.8	201.3	205.6	203.1	183.3	193.3	197.3	187.8	189.3	192.7	181.3	181.6	193.7
1947-48	334.1	344.6	367.0	378.8	319.1	326.8	326.4	322.3	320.7	284.6	262.2	243.1	319.0
1946-47	254.8	210.4	194.8	192.0	200.4	244.0	248.3	251.3	255.4	294.4	322.3	343.0	253.5

Compiled by Market News Branch, Grain Division, Agricultural Marketing Service, U.S. Department of Agriculture.

USDA Sells Nonfat Dry Milk for Feed Use

WASHINGTON—Sale of 843,940 lb. of Commodity Credit Corp.-owned nonfat dry milk for domestic animal feed use was reported this week by the U.S. Department of Agriculture. The milk is unsuitable for human food use.

CCC stocks totaling about 2.4 million pounds were found unsuitable for human food use and offered for sale. Of this quantity, 1,445,686 lb. have been sold, including the latest sales.

The USDA announced that it will continue to receive bids for the remainder under sales schedule No. 4 of Announcement DA-110.

Here are the details of the recent sales: Wm. Fitzgerald Milk Products Corp., Watertown, Wis., 262,240 lb. at 9.15¢ lb.; M. E. Franks, Inc., New York, 197,600 lb. at 9.15¢ lb.; Greutker, Inc., Buffalo, N.Y., 45,000 lb. at 9.15¢ lb.; Lamartine Creamery Co., Fond du Lac, Wis., 47,000 lb. at 9.15¢ lb.; H. C. Christians Co., Chicago, 94,500 lb. at 9.15¢ lb.; M. E. Franks, Inc., New York, 197,600 lb. at 9.15¢ lb.

USDA also reported recent sales of 2,911,130 lb. of CCC-owned nonfat dry milk solids for commercial export, including a sale of 2,314,830 lb. under PL-480 (foreign currency) for export to Greece. These sales bring the total of CCC-owned nonfat dry milk sold for export to 18,788,869 lb.

Sales Manager Named By Universal Hoist

CEDAR FALLS, IOWA—Jim McKillip, Jr., has been appointed sales manager for the Universal Hoist & Mfg. Co., according to an announcement from Koert S. Voorhees, manager.

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He formerly was sales manager for Roskamp Huller Mfg. Co., Inc., also at Cedar Falls.

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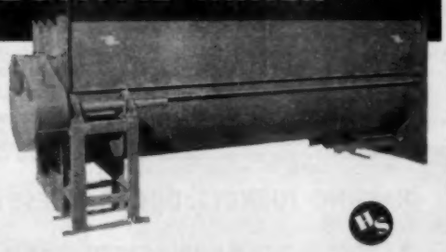

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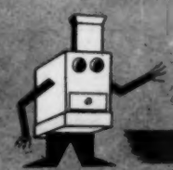

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hatchable eggs. On the basis of 74% hatchability, this would give a daily income of $2.73 when the price is 73¢ a dozen. At the same number of eggs and the same price of eggs, 80% hatchability would give $3.02 because of the 8¢ doz. premium for the higher hatchability. Again, the "superior" ration has produced greater income.

Using the same cost and production figures which we used in the comparison of laying feeds, we find that the feed cost per day would be $1.05 for an "average" breeder feed. The profit over feed cost would be $1.67 per day. To get this same profit over feed cost with a "superior" breeder ration, we could pay $1.35 every day for feed. That comes out to 5.79¢ lb. for feed cost, or $116 per ton ($3.02 minus $1.67 equals $1.35; $1.35 divided by 23.3 equals 5.79¢ lb.). The "superior" breeder feed, then, is worth $26 ton more than the "average" breeder feed priced at $90 ton.

The returns we get from feeds that give superior results almost justify the relatively small price difference over an "average" feed.

What's New in Rations

There is nothing especially new in laying formulas that shows promise of increasing egg production or hatchability by 6%. Stabilized vitamin A, to a less extent vitamin D, and trace minerals that are compatible with vitamins have come into more general use in the past year. There have been new developments in vitamin K and E and in the use of antioxidants. At present, the general use of antibiotics, at either high or low levels in laying or breeding rations does not seem justified. Improvement has usually been confined to flocks giving poor production.

Vitamin K and the Hemorrhagic Syndrome—Especially in the presence of stress factors, such as vaccination, there can be a deficiency of vitamin K in practical rations. Symptoms of the hemorrhagic syndrome have been found in embryos and newly hatched chicks indicating a deficiency of vitamin K in the breeding ration is possible. The use of menadione, menadione sodium disulfite, or certain vitamin B_{12} antibiotic supplements in breeding and broiler rations, and possibly replacement rations, seems justified.

Arsenicals—As in the case of antibiotics, consistent results have not been obtained with the use of arsenicals in poultry rations. The general use of arsenicals in laying and breeding rations is not, at the present time, justified. Increases have been confined to poor producing flocks. The judicious use of arsenicals in broiler or replacement feeds, either with or without antibiotics, has proven economical. Some improvement has been observed by their use in replacement rations.

Vitamin E—In most rations, there is an adequate amount of vitamin E to meet the needs of usual production practices. The addition of alpha-tocopheryl acetate to the breeding ration and to the chick diet has prevented the trouble. The addition of some supplementary source of vitamin E seems justified in breeding rations and chick diets when encephalomalacia is a problem or as a safety factor in high energy rations containing fats. The minimum requirements of vitamin E are not known.

Diphenyl-p-phenylene diamine (DPPD)—The antioxidant, diphenyl-p-phenylene diamine (DPPD) has been found to be effective at the 0.0125% level in preventing encephalomalacia under certain conditions but not all. At this level, it has been found to increase vitamin A liver storage in chicks and apparently reduces the requirement of vitamin A for growth. Its use in broiler rations seems justified because, in addition, it enhances pigmentation.

The excellent results obtained with DPPD in preventing encephalomalacia has led to its use in laying and breeding rations. The addition of DPPD at the 0.0125% level (¼ lb. per ton) to 8 out of 10 formulas gave lower percentage of egg production in production-bred Reds from December, 1954, to June, 1955. Only in one formula did the addition seem justified on the basis of increase in egg production. This was also true for hatchability. With only one formula was the hatchability of fertile eggs materially improved. The decrease in hatchability was less than in egg production.

Pantothenic Acid—The addition of extra amounts of certain vitamins to certain formulas may do more harm than good. The proper amounts of nutrients and their relationship are important. When 1 milligram per pound was added to 8 out of 10 complete layer-breeder formulas, egg production was reduced. With only one formula was there an increase that approached importance. Hatchability was also less with 7 out of 10 formulas to which pantothenic acid (1 milligram per pound of diet) was added.

Energy/Protein Ratios in Laying and Breeding Rations — Under the conditions of an experiment in which production-bred Reds weighing about 5.5 lb. were fed five basic formulas from December to June, there seemed to be no very definite relationship between the energy content of the ration, the energy to protein ratios and either egg production or hatchability of fertile eggs.

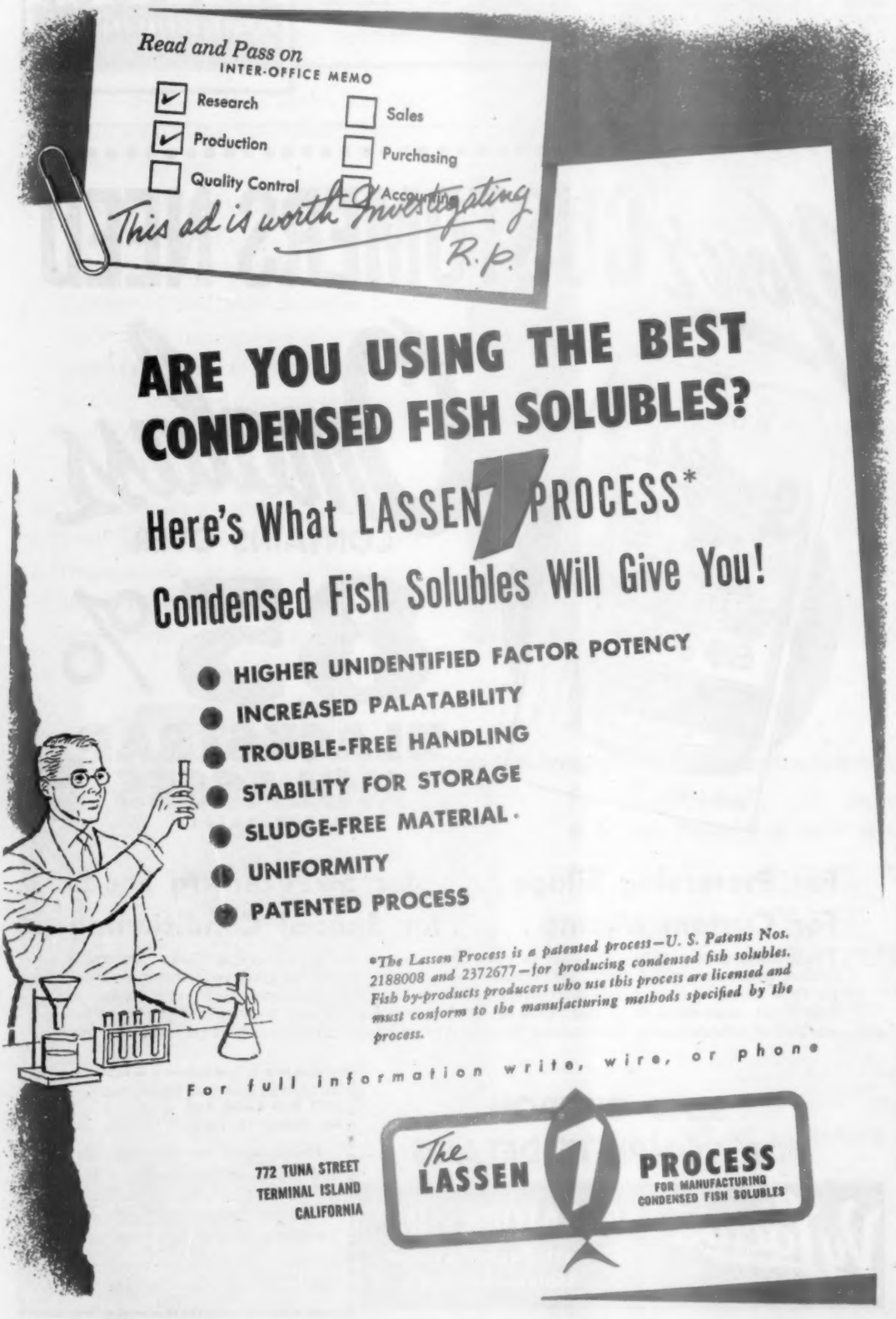
Conclusion

It has not been possible to cover many new developments in the use of amino acids, hormones and new ingredients, such as poultry by-products, in poultry rations.

When a formula is giving good results, some caution should be used in changing it on the basis of new research and developments until the evidence is convincing. It should not be assumed that just because a new discovery is good for chicks that it is also good for layers and breeders. Sound research and nutritional knowledge are the basis of future developments in the feed industry.

VICTOR MYER DIES

KANSAS CITY—Victor Myer, 79, former president of the Blaker Milling Co., Pleasanton, Kansas, and the Blaker Lumber & Grain Co., Kansas City, died Jan. 7 in Kansas City.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Wholesale Feedstuffs Price Index

INDEX NUMBERS OF WHOLESALE FEEDSTUFFS PRICES
BASE PERIOD 1935-39=100

Season	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Aver.
1955-56	194.4	186.0	188.3	...	...	...	...	...	...	...	...	...	...
1954-55	216.9	221.6	222.2	223.0	222.8	216.5	211.0	205.5	199.5	197.7	191.9	186.8	210.0
1953-54	201.2	203.6	225.2	234.8	239.0	248.1	266.4	262.8	239.5	242.0	237.3	219.2	234.1
1952-53	262.4	267.3	267.3	261.7	242.0	238.3	227.8	229.2	215.7	216.4	211.3	205.5	234.1
1951-52	268.9	269.0	274.6	277.1	274.0	272.0	279.4	277.4	275.6	270.9	262.6	252.4	261.5
1950-51	207.2	221.1	229.0	233.6	241.3	240.3	243.9	240.7	237.4	240.4	236.6	246.6	234.8
1949-50	212.5	209.7	214.3	206.7	202.9	212.4	221.8	237.3	237.8	251.2	227.5	213.6	219.8
1948-49	208.8	230.4	230.0	226.6	210.8	214.3	226.4	221.4	216.5	229.2	239.2	219.4	222.6
1947-48	283.6	283.1	301.9	313.7	281.6	272.6	275.3	271.6	277.1	259.4	220.1	221.7	271.8
1946-47	229.7	256.0	221.6	208.6	197.4	236.7	226.5	223.0	238.8	267.1	263.9	288.1	237.0

Compiled by Market News Branch, Grain Division, Agricultural Marketing Service, U.S. Department of Agriculture.

INDEX NUMBERS OF FEED GRAIN PRICES (CORN, OATS BARLEY AND GRAIN SORGHUMS), OCTOBER, 1935, TO SEPTEMBER, 1940=100

Season	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Aver.
1955-56	175.4	176.0	186.3	...	...	...	...	...	...	...	...	...	...
1954-55	221.4	216.3	216.5	212.5	211.0	205.4	208.1	214.3	212.9	209.3	192.7	185.1	208.9
1953-54	206.4	208.1	210.0	218.3	215.9	218.6	220.6	223.8	225.5	223.1	225.4	224.9	219.1
1952-53	228.3	223.6	223.0	227.4	218.9	221.6	221.4	225.3	218.7	221.0	224.4	223.9	224.7
1951-52	247.6	261.4	272.7	269.1	264.5	266.5	264.7	266.3	264.6	262.1	253.4	249.4	256.8
1950-51	207.5	219.9	232.0	240.3	260.3	246.8	247.4	248.6	236.6	240.6	241.8	243.1	237.6
1949-50	173.8	173.5	184.0	184.5	185.3	190.6	201.5	211.3	211.3	218.6	211.6	210.9	196.4
1948-49	207.8	201.3	205.6	203.1	183.3	193.2	197.3	187.5	189.3	192.7	181.3	181.6	193.7
1947-48	334.1	344.6	367.0	378.8	319.1	326.8	326.4	322.3	320.7	284.6	262.2	243.1	319.0
1946-47	254.8	218.4	194.8	192.0	200.4	244.0	248.3	261.1	285.4	294.4	322.3	343.0	253.5

Compiled by Market News Branch, Grain Division, Agricultural Marketing Service, U.S. Department of Agriculture.

USDA Sells Nonfat Dry Milk for Feed Use

WASHINGTON—Sale of 843,940 lb. of Commodity Credit Corp.-owned nonfat dry milk for domestic animal feed use was reported this week by the U.S. Department of Agriculture. The milk is unsuitable for human food use.

CCC stocks totaling about 2.4 million pounds were found unsuitable for human food use and offered for sale. Of this quantity, 1,445,686 lb. have been sold, including the latest sales.

The USDA announced that it will continue to receive bids for the remainder under sales schedule No. 4 of Announcement DA-110.

Here are the details of the recent sales: Wm. Fitzgerald Milk Products Corp., Watertown, Wis., 262,240 lb. at 9.15¢ lb.; M. E. Franks, Inc., New York, 197,600 lb. at 9.15¢ lb.; Greutker, Inc., Buffalo, N.Y., 45,000 lb. at 9.15¢ lb.; Lamartine Creamery Co., Fond du Lac, Wis., 47,000 lb. at 9.15¢ lb.; H. C. Christians Co., Chicago, 94,500 lb. at 9.15¢ lb.; M. E. Franks, Inc., New York, 197,600 lb. at 9.15¢ lb.

USDA also reported recent sales of 2,911,130 lb. of CCC-owned nonfat dry milk solids for commercial export, including a sale of 2,314,830 lb. under PL-480 (foreign currency) for export to Greece. These sales bring the total of CCC-owned nonfat dry milk sold for export to 18,788,869 lb.

Sales Manager Named By Universal Hoist

CEDAR FALLS, IOWA—Jim McKillip, Jr., has been appointed sales manager for the Universal Hoist & Mfg. Co., according to an announcement from Koert S. Voorhees, manager.

Mr. McKillip will be responsible for sales, advertising and merchandising of the Universal bucket elevators, conveyors, corn graders, drum hoists and accessories.

He formerly was sales manager for Roskamp Huller Mfg. Co., Inc., also at Cedar Falls.

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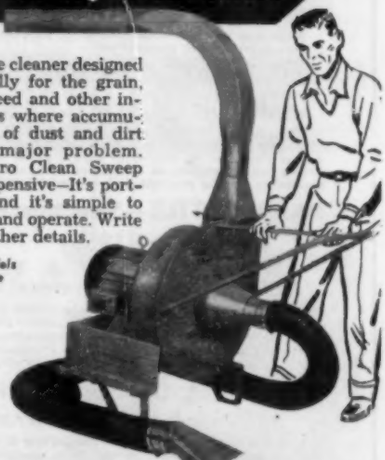

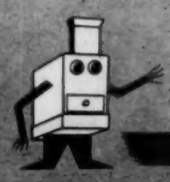

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FLOODS

(Continued from page 15)

erty, businesses and agriculture was widespread over a 500-mile long and 200-mile wide area, the over-all loss was relatively light compared to the balance of the state. Property damage will be high, but crop damage was comparatively light.

The main crop, among forage crops, to suffer was alfalfa, and ladino seed fields were hit. Normal production was predicted in cases where fields were gently flooded and where water receded in the same manner but quickly. Pasture lands and ladino fields were hit by silt coverings that snuffed out the growth. The deposit of silt in many cases has been from a few inches to several feet in thickness. However, in some cases this will almost be a boon rather than a handicap since much of the silt is top soil and will add to the fields in future fertility. Haying operations for the coming summer are expected to be affected little by the wettings, experts believe.

Hardest Hit Counties

The four hardest hit counties agriculturally were Sutter, San Joaquin, Sacramento and Humboldt. At Yuba City, Sutter County seat, the dyke of the Feather River gave way from pressure of river waters already swollen by mountain rains and melting snows, pouring an eight foot deep wall of water through the hapless city and out into 150 square miles of agricultural lands beyond. Farther south some 120 miles in San Joaquin County, farmers and volunteers battled heroically but vainly to stem the rushing waters of four rivers that crested and poured water over 38,000 acres of pasture, onion, sugar beet, spinach, pea, alfalfa, corn and asparagus lands. In Humboldt County, high in the northwest corner, besides the already reported livestock loss, supplies of hay and grain on the inundated farm lands were washed to sea as heavy storm-tossed waves held back the rushing waters of the Eel and other rivers to flood 52,000 acres.

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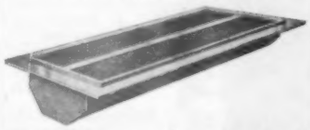

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DISASTER AREAS

WASHINGTON—The U.S. Department of Agriculture recently announced designation of six California counties as disaster areas where eligible farmers and stockmen can participate in the emergency feed program. The counties are: Butte, Del Norte, Tulare, Humboldt, Sutter, and Yuba. All the California designations are the result of floods. Under provisions of the emergency feed program, eligible farmers and stockmen in designated areas may obtain certain feed grains or mixed feeds at a reduction in price of $1 per cwt. of grain. The program is designed to help stockmen in stricken areas maintain basic livestock herds.

In Sacramento rice lands, now vacant, were submerged and in the Delta lands, lowland pear orchards were flooded.

Orchards were hardest hit of all agricultural enterprises. In the "Peach Bowl" at Yuba City, the cling peach center of the nation, trees were uprooted, broken and swept away in orchard after orchard. The Delta lands saw the same treatment dealt to their pears, and water stood in many orchards throughout the entire fruit growing area. Berry lands in the Watsonville and Santa Cruz areas on Monterey Bay were also affected by the heavy rains and overflowing creeks.

One thing that perhaps should be mentioned is the difficulty many retail feed men had in making deliveries to their customers. Knowing that they had to get through with their feed loads, many drove trucks as close as possible and then bucked in sack after sack on their backs to their customers or had customers meet them with their own trucks on the other side of swollen rivers or slides. Although many hours were spent in service during the storm, no customer went without feed for his cattle or poultry if at all possible to serve him.

Boston Exchange Sets Feb. 9 for Banquet

BOSTON — The Boston Grain and Flour Exchange will hold its annual banquet here at the Hotel Somerset Feb. 9, it was announced by Paul R. Sutliff, publicity committee chairman.

Approximately 400 visitors from the U.S. and Canada are expected to attend the event.

Long-Time Employee Of Early & Daniel Dies

CINCINNATI — John M. Lodwick of the Early & Daniel Co., Cincinnati, died Jan. 14 at this home in Cincinnati.

Mr. Lodwick had been with the feed department of the Early & Daniel Co. for over 35 years, starting as a salesman and later being connected with the advertising and sales department in the home office. He was 62 years old.

He is survived by his widow, his son, James W., a daughter, Dorothy A. Langhorst, two sisters and seven grandchildren.

Full Hydraulic Control

"NEW LEADER" BULKMASTER for FAST, EFFICIENT feed delivery at its best!

Air-Unloading BULKMASTER

NEW HYDRAULIC CONTROLLED CONVEYOR— All controls conveniently located. Operates independently or simultaneously with auger. Full 36" width conveyor. Heavy duty rubber belt riveted to cross bars of all steel roller type drag chain gives smoother material flow without carry-back.

NEW HYDRAULIC CONTROLLED AUGER— Quick, positive action with speed control for faster, smoother bulk feed delivery—UP TO ONE TON PER MINUTE UNLOADING. Full hydraulic power to raise and lower final discharge auger reduces unnecessary weight, makes handling easier.

Self-Unloading Transports

NEW DESIGN HOPPER— Improved "New Leader" design. Steeper sloping sides and wide conveyor give low center of gravity as well as faster unloading. All welded high tensile steel construction. Stronger, yet lighter—more payload every trip.

NEW REAR DOOR— Big rear door opens wide for dock loading of bagged feed and other items. Haul both bulk and bagged feed at the same time. Compartments for dividing load.

HI-MOLASSES DAIRY FEED BODY

Write TODAY for FREE Bulletins!

HIGHWAY EQUIPMENT CO., Inc.

616 D Ave., N.W., Cedar Rapids, Iowa

Manufacturers of The World's Most Complete Line of Spreaders and Bulk Material Delivery Equipment

THIS MOLASSES MIXER NEEDS NO CLEANING . . . EVER!

SECO'S TWIN MIXERS—in four sizes, from three to twenty tons per hour capacity. Hundreds of satisfied users prove molasses mixer cleaning is completely eliminated . . done FOR YOU by SECO's twin rotors with paddles that clean each other!

SECO's revolutionary design gives many other advantages, too:

1. Beating action that mixes better . . . no lumping . . . and molasses does not have to be heated. 2 Capacity up to ten tons per hour in the S-50 model (as shown) and twenty tons in the S-100 model—greater than most mixers costing twice the amount . . with variable speed auger feeder to handle all feeds in any amount. 3. Separate motor and pump to handle any consistency of molasses . . will not lose prime. 4. Adaptable to any installation . . . can be used with auger feeder (both vertical and horizontal) or fed direct from above.

The SECO Twin Mixers are sturdy, durable mixers that will give years of trouble-free, efficient service. They are backed by over twenty years of mill and manufacturing experience . . . by the very finest materials and workmanship . . and by a WRITTEN MONEY BACK GUARANTEE.

Please send free literature about SECO's Twin Mixers ☐.
Send literature about other mill equipment ☐.
Send information about protected dealer territory ☐.

Name_____ Firm_____

City_____ Zone_____ State_____

SOUTHERN EQUIPMENT COMPANY

GOODLETTSVILLE, TENNESSEE

2 Firms to Make New Type of Pallet

NEW YORK — Appointment of Mead Board Sales, Inc., Lynchburg, Va., and Sonoco Products Co., Hartsville, S.C., as manufacturing and sales agents for Accopak pallets, a new device for industrial palletizing, has been announced by R. E. Sumner, manager of the industrial chemicals division of American Cyanamid Co.

The paper pallet, which can support a load up to 4,000 lb., consists of a kraft paper sling fitted with spiral-wound paper tubes. It is adaptable for use with any type of fork lift truck equipped with a new type bayonet fork. The pallets are inexpensive, require little storage space and are easily and quickly assembled, officials of American Cyanamid say. As a result, they say, it has proved possible to palletize, handle and ship bagged and sacked commodities at substantial savings in time, money and space as compared with any previous methods.

American Cyanamid first announced the new pallet about a year ago.

Poultry Nutritionist Appointed at Colorado

FORT COLLINS, COLO.—Paul A. Thornton, 30, has been appointed assistant professor of poultry husbandry and assistant poultry husbandman for the Colorado A&M Experiment Station.

Prof. Thornton will be concerned primarily with teaching and research in problems of poultry nutrition. He received his B.S. and M.S. degrees from the University of Kentucky and has completed requirements for a Ph.D. degree from Michigan State University. Study toward Ph.D. degree involved use of radioactive isotopes in investigations of how feed travels through the digestive tract of chickens.

He will report results of this study before an Atomic Energy Commission conference in East Lansing, Michigan.

Prof. Thornton's experience includes work with the California Extension Service at Modesto. He was also research assistant at the Western Kentucky sub-station of the Kentucky Agricultural Experiment Station.

Promotions Announced By Fort Worth Steel

FT. WORTH—John D. Wittmayer has been appointed to the new post of controller of Ft. Worth Steel & Machinery Co. He continues as the firm's secretary-treasurer, a position he has held for several years. Miss Marguerite Bridges has succeeded him as chief accountant and also has been appointed assistant secretary of the company.

Mr. Wittmayer had been chief accountant since joining the company 6½ years ago. A Ft. Worth native, he was graduated from Texas Christian University in 1941.

Miss Bridges was corporate secretary of Monarch Manufacturing Co. of Ft. Worth before taking her new position. Monarch was recently acquired by FWS&M.

Fort Worth Steel & Machinery manufactures machinery for handling bulk materials and specialized machinery for feed mills.

NAMED SALES MANAGER

HOWARD LAKE, MINN.—Anton T. Endreson has been named general sales manager of the Munson Feed Co., Howard Lake, Minn.

EGGS EGGS EGGS EGGS
FOR ONLY 2¢ A DOZEN
That's what the extra production costs using
MAYO'S "SNOW FLAKE"
pure reef OYSTER SHELL
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New ROSS "MIGHTY MITE"
Steps Up Milling Profits!

- Crimps all grains, oats, corn, barley, milo, etc.
- Handles up to 50 sacks per hour
- Eliminates waste of costly grains
- Produces more appetizing, more nutritious feeds

Only $1195 f.o.b. Okla. City DRIVE OPTIONAL
Available with or without Ross Jet Steamer $525
Quick Delivery Other sizes: 7x15 to 18x36
The new Ross Mighty Mite weighs 1800 pounds, has solid chilled iron rolls with Ross Long Life special crimp corrugations. It features an enclosed chain differential drive, Timpkin Taper bearings, micro-adjustment, positive tram and shear washer to protect the rolls. Seamless steel case is made of ¼" and 3/8" plate and is equipped with double inspection doors. Millers report it is excellent for minimum space requirements because of its compact, streamlined design. Write for complete information.
ROSS MACHINE AND MILL SUPPLY, INC.
12 N.E. 28th OKLAHOMA CITY 5, OKLA.
ROSS FOR ROLLS

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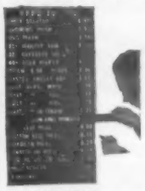

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Pay Way is becoming the choice of more dealers every year. Why? Because dealers have found that
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Bemis Expands Output Of Specialty Items

ST. LOUIS — The Norfolk, Va., plant of Bemis Bro. Bag Co. is expanding its facilities for the manufacture of various textile specialty items, it has been announced by W. D. Stohlman, manager. It will also take on an enlarged delivery territory for textile bags, while sales territories remain unchanged.

Additional plant space for this expansion is being made available by the reallocation of Norfolk's previous small paper bag manufacturing capacity to the Bemis plants in Buffalo and Memphis.

The Norfolk sales division will continue to be responsible for the sales of all Bemis products in its territory. Production of cotton, burlap and open-mesh will be increased, and textile specialties will be added. Additional presses and sewing equipment are being installed to take care of this new line of products.

BAGS TO HOLD YOUR PRODUCT
DESIGNS THAT SELL IT!
COTTONS • BURLAPS • MULTIWALLS
PERCY KENT BAG COMPANY, INC.
Kansas City • Buffalo • New York

Dealers Do Better With
HONEGGERS'
WRITE • WIRE • PHONE
HONEGGERS' • Fairbury, Illinois

Whitmoyer Outlines Anniversary Program

MYERSTOWN, PA. — Plans for 1956, the company's anniversary year, were unfolded at the sales meeting held by Whitmoyer Laboratories, Inc., at Myerstown, Pa., recently.

The entire firm's sales and service organization, including the Ontario and Maritime representatives of the Canadian affiliated company, Whitmoyer Laboratories, Ltd., Yarmouth, Nova Scotia, were present. Also present were Ray Grandone and the sales staff of Grandone, Inc., New England distributor for Whitmoyer products.

M. B. Gardner, sales vice president, presided over the four-day meeting and C. W. Whitmoyer, president of the organization, was among the

More poultry and livestock were fed on Ultra-Lifed Feeds in 1955 than in any other year!

Get the facts . . . let the Ultra-Life Program help you sell more feed in 1956.

Write today for complete details about the exclusive Ultra-Life feed manufacturing and service selling program that gives you top sales advantage.

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One of the Country's Oldest and Largest Manufacturers of Vitamin and Trace-Mineral Products

EXACT WEIGHT High-Speed Low-Platform Feed Scale

Speeds manual sacking or check-weighing of feedstuffs two ways—short lever fall and the action of an adjustable damping device bring indicator to rest quickly, and magnified indication makes possible an accurate reading at a glance. Weighing platform is only 6½ inches from floor—minimizes lifting of containers. Open construction permits easy cleaning. Weighs accurately in out-of-level position. Write for complete information on Model 1120-V.

Sales and Service from Coast to Coast

Exact Weight Scales
Better quality control
Better cost control
THE EXACT WEIGHT SCALE COMPANY
908 West Fifth Avenue, Columbus 8, Ohio
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LOW-FLUORINE
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IMPORTED PHOSPHATE ROCK
FLUORINE CONTENT LESS THAN ONE-HALF OF ONE PER CENT
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Classified advertisements accepted until Wednesday each week for the issue of the following Saturday.
Rates: 15¢ per word; minimum charge $2.25. Situations wanted, 10¢ a word; $1.50 minimum. Count six words of signature, whether for direct reply or keyed care this office. If advertisement is keyed, care of this office, 20¢ per insertion additional charged for forwarding replies.
Classified advertising rate not available for commercial advertising. Advertisements of new machinery, products and services accepted for insertion at minimum rate of $9 per column inch.
All Want Ads cash with order.

HELP WANTED

REPRESENTATIVES — NEW ENGLAND, states touching Great Lakes and Atlantic Seaboard, selling bulk dehydrated alfalfa products. Ad No. 1361, Feedstuffs, Box 67, Minneapolis 1, Minn.

SELL DEALERS AND DISTRIBUTORS complete line of high potency liquid fertilizers and ground solutions. Attractive packaged goods for over counter sales. Unlimited earnings. H. D. Campbell Co., Rochelle 5, Ill.

EXPERIENCED FEED SALESMAN TO represent large eastern feed manufacturer in the state of Virginia. Reply to contain full particulars of past experience. Ad No. 1346, Feedstuffs, Box 67, Minneapolis 1, Minn.

EXPERIENCED DOG FOOD SALESMAN with a following among feed stores, to sell nationally distributed dry dog food. Complete line. Many territories open. Commission and expense allowance. Ad No. 1349, Feedstuffs, Box 67, Minneapolis 1, Minn.

WANTED — CAPABLE FEED MILL SUperintendent looking for a steady job who has had at least five or more years as assistant to superintendent in large, modern plant. Salary starts at $5,000. Give all details in first letter. Write to Honegger-Hanley Mills, Inc., Box 397, Mansfield, Ohio.

SALESMAN WANTED — UNLIMITED OPportunity for live-wire sales-getter with Myzon, Inc., fast growing manufacturer of nationally advertised antibiotic and vitamin feed and water additive specialties for poultry and livestock. Sell only through jobbers and dealers. Several territories open. Livestock and poultry background preferred. Salary, expenses and bonus. Car furnished after six months. Reply by letter only giving full details. Write to Myzon, Inc., Dept. 2C, 3129 W. 47th St., Chicago 32, Ill.

SALES MANAGER WANTED — IF YOU can hire and direct good salesmen like those we now have—selling to farmers—here's your chance to make money and build a future. Manager we want for this lively spot should earn $15,000 or more annually in over-ride commissions, plus monthly salary. If you have had experience selling farm feeds or similar products, you'll have a big advantage here. Tell us enough about yourself to get interview. Enclose photo if possible. Our products are well known to all farmers—easy to sell. Your letter will be treated confidential. Ad No. 1400, Feedstuffs, Box 67, Minneapolis 1, Minn.

FEED SALESMAN

Wanted for Midwest area. Free insurance, hospitalization, retirement. High base salary, bonus, expenses paid. If you are experienced in the feed business, this is the lifetime opportunity you are looking for. Our company is nationally known. Age 30 to 50. Reply giving age, marital status, and experience in feed sales or in allied industry. All replies will be handled in strict confidence. Ad No. 1343, Feedstuffs, Box 67, Minneapolis 1, Minn.

FEED SALESMEN

This is an excellent opportunity. We are an established Midwest Company, expanding our Formula Feed Sales, and are in need of additional experienced feed salesmen to work in our Kansas territories. Salary and commission arrangement offers attractive earnings opportunity, plus sound employee relations program.

Reply giving full information regarding education, training and personal history to Ad No. 1377, Feedstuffs, Box 67, Minneapolis 1, Minn.

NUTRITIONIST

We need man with B.S. or M.S. degree in Animal Nutrition and a few years' commercial feed experience. Will do feed formulation and give technical service to our meal customers.
Should be interested in research and have sales personality. Would be located in Decatur, Illinois. Excellent promotional possibilities, good pay and liberal employee benefits.
Please send complete resume to Personnel Department.

A. E. STALEY MFG. COMPANY
Decatur, Illinois

HELP WANTED

WANTED EXPERIENCED FEED SALESman by old established mill, for either Ohio, Pennsylvania, Michigan, West Virginia or Virginia territories. Ad No. 1383, Feedstuffs, Box 67, Minneapolis 1, Minn.

FEED PRODUCTION MANAGER NEEDED by fast-growing medium-size Midwest mill making all types of feeds exclusively. Salary and bonus. Splendid opportunity in fine area. Ad No. 1399, Feedstuffs, 612 Board of Trade Bldg., Kansas City, Mo.

EXPERIENCED OFFICE MANAGER AND bookkeeper capable handling complete set books. Familiar with inventory control, transit and CCC billing. Excellent opportunity with a fast growing company. Wonderful climate. Good living conditions. Give complete details and photo in first letter. Casa Grande Warehouse Co., Inc., Casa Grande, Arizona.

AVAILABLE TO AN AGGRESSIVE, INtelligent individual experienced in the sale of poultry equipment and veterinary drugs to dealer organizations—an established territory in New Jersey and New York State. Expenses and transportation provided for. Salary and commissions—state qualifications. Ad No. 1389, Feedstuffs, Box 67, Minneapolis 1, Minn.

FEED SALES SUPERVISOR

National feed manufacturer has opening for Feed Sales Supervisor. Excellent opportunity for advancement. Age: 30-45. Must have working knowledge of nutrition, capable of supervising feed dealers and sales organization. Territory: Portion of Missouri, Arkansas and Kansas. Send full particulars and recent photo to Ad No. 1379, Feedstuffs, Box 67, Minneapolis 1, Minnesota.

REGIONAL SALES MANAGER

Unusual supervisory position for man with feed sales experience in the Del-Mar-Va area. Must be top man who can supervise sales force in the area. Management ability will be strong factor. If interested and qualified, send resume to Personnel Dept., LINDSEY-ROBINSON & CO., Box 511, Roanoke, Va. Replies will be held in strict confidence.

A very challenging opportunity in Animal Nutrition Division of a national food company. A top sales position requiring technical background and ability. Excellent growth possibilities. Write for more information, but give adequate description of your educational and experience background. Your letter will be treated confidentially. Assistant to the President, Red Star Yeast and Products Company, Milwaukee 1, Wisconsin.

MACHINERY FOR SALE

WHIRLAWAY AIRBLAST CAR LOADERS. J. E. Hagan Mill Machinery, Jefferson City, Mo.

3UX JAY BEE MILL AND FAN, FULLY rebuilt. 50 H.P. motor, dust collector, elbow, starter. Excellent condition. Farmington Sweet Feed Mill, Farmington, Ky.

FOR SALE—ENCLOSED MOTORS, RICHardson Scales, truck scales, hammermills, oat crimpers, horizontal and upright feed mixers, sewing machines, elevator legs, screw conveyors, molasses mixers and pellet mills. J. E. Hagan Mill Machinery, Box 574, Jefferson City, Mo.

MACHINERY FOR SALE

CHAMPION MOBILE GRINDER AND Mixer units. Champion Portable Mill Co., 2105 Como Ave. S.E., Minneapolis 14, Minn.

FOR SALE — TYLER-NIAGARA DOUBLE deck screen. 3'x6' motor drive type, T-300, Serial No. 9755. Used one year. Regal Packer By-Products Co., Lynn Center, Ill.

FEED MIXER, 1-TON CAPACITY, GUARanteed first-class throughout, 5 H.P. motor drive. Ad No. 8774, Feedstuffs, Minneapolis 1, Minn.

WHEN YOU ARE IN THE MARKET FOR new or used mill machinery, electric motors or any other equipment, write J. E. Hagan Mill Machinery, Jefferson City, Mo.

WRITE US, WE HAVE WHAT YOU NEED in supplies for feed and flour mills. If it's new or used, buy it from Hughes, Wayland, Mich.

FOR SALE — MOLASS-OFIER, MOLASSES Blender, complete with drive, never uncrated, requires 3 H.P. motor for custom feed mill use; $350. Box 222, Hillsdale, Mich.

MODEL HBI 600 CUMMINS DIESEL WITH hydraulic governor, clutch, base, outboard bearing, radiator, batteries, Maxim silencer, etc. Ten years old, $990. Mayhew Elevator Co., Ravenna, Ohio.

BROWER FEED MIXER, 700-LB. CApacity. First class condition. General Electric 3 H.P., 3-phase motor. Dairyland Milk Corporation, 820 Hampden Ave., St. Paul, Minn.

FOR SALE—NO. 36 VIBROX BAG PACKer equipped with a one H.P. totally enclosed ball bearing motor for 3-phase, 60-cycle, 220/440-volt alternating current, complete with double "V" belt drive and guard. Small round cradle $\frac{1}{16}$" throw—440 R.P.M., $200. Sherwood Feed Mills, Inc., 500 President St., Baltimore 2, Md.

FOR SALE—MODEL 81 ROTEX SCREENer, single deck, standard dust tight, 60"x 120" surface, complete with 3 H.P., 1,800 R.P.M., 220/440, totally enclosed motor and four extra screen frames. Used very little. Price $2,250, Rossville, Kansas. Call or write Kaw Dehydrating Co., Box 1098, Topeka, Kansas.

BUSINESS OPPORTUNITIES

FOR SALE—TWO DRUM ALFALFA DEhydrating plant located in good alfalfa producing and marketing area in Midwest. Plant is very modern with pelleting equipment and large amount of warehouse space. Picture and details will be sent on request. Ad No. 1388, Feedstuffs, Box 67, Minneapolis 1, Minn.

FEED BUSINESS AND MODERN MILL for Sale—Located 30 miles from Philadelphia, 20 miles east of Trenton. Established and serving feeders for more than 100 years. Equipment includes three large warehouses, one hammermill, two sets large elevators, four storage bins, two feed mixers, molasses mixer, corn sheller and electric cracker, also other necessary machines and equipment. Beacon Feeds dealership. Owner retiring. Ad No. 1410, Feedstuffs, 551 Fifth Ave., New York 17, N. Y.

ATTENTION DOG FOOD AND FEED Manufacturers — In the territory east of Philadelphia, i.e.—New Jersey, New York, Connecticut, Massachusetts — two of us (considered the best in our line) sold over two million pounds of dry dog food plus 1,500 tons specialty feeds (rabbit, etc.). Can deliver—in time—all of this business to reliable manufacturer. Drawing account, car necessary to buy our services. Standing with trade unimpeachable—no bad accounts. Internal management difficulties present connection make this change necessary. All correspondence confidential. Ad No. 1401, Feedstuffs, Box 67, Minneapolis 1, Minn.

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ELEVATORS or
FEED MILLS
See or Write Us Your Needs
We Have Some Good Ones in
OHIO-INDIANA-ILLINOIS
MID-WEST BUSINESS EXCHANGE
Halbert C. Smith Plymouth, Ind.

Use Feedstuffs WANT ADS for RESULTS

CLOSING OUT LOCAL FEED MILL — Master Model California Pellet Mill with starters, cooler, crumble roll and grader, all with motors; Union Special Bag Closers; Roto-Pak Bag Packer; 3 UX Hammer Mill with 40 H.P. motor and starter; new No. 40 Webster Single Power Shovel; 9x18 and 9x24 Two-Pair High Roller Mills; S. Howes Corn Cutter with 10 H.P. motor; Snappy Shaker Buhler Drive, complete with motor; No. 4 S. Howes Standardized Receiving Separator, with motor and drive; Toledo Dial Type Platform Scale, 200 lb.; 18" Beall Aspirator with fan; Vertical and Horizontal 1-ton Mixers; Wood and Metal Conveyors. Many other items: Motors, Reducers, Feeders, Bag Trucks, etc.

GENERAL MILL EQUIPMENT CO.
2021 Pennsylvania, Kansas City, Mo.

SITUATIONS WANTED

FEED MILL PRODUCTION SUPERINtendent now employed wants new location. 22 years' experience both large and small mills. Ad No. 1396, Feedstuffs, 141 W. Jackson, Chicago 4, Ill.

SALES AND/OR NUTRITIONAL WORK—Age. 32, single, veteran, good health. B.S. in milling chemistry. M.S. plus additional hours in animal nutrition. Farm and livestock background. Personable and neat. Kenneth Wheatcroft, Hoisington, Kansas; Phone: 41F12.

COMPETENT AND SUCCESSFUL GENERal manager and/or director of sales and service, now with one of the country's leading firms, seeks new connection, preferably in Midwest. Ad No. 1360, Feedstuffs, 141 W. Jackson Blvd., Chicago 4, Ill.

INTERESTED IN CHANGE — COLLEGE graduate, sixteen years' experience selling and developing territories for quality feed manufacturer. Have concentrated on opening and developing dealers. Believe in up to date merchandising and feeding practices. Ad No. 1390, Feedstuffs, Box 67, Minneapolis 1, Minn.

BABY CHICKS FOR SALE

BABY CHICKS—AS HATCHED OR SEXED —Five popular breeds and one hybrid. Quality - Quantity - Service. Wholesale prices. Milford Hatchery, Liberty Road, Randallstown, Md.

MACHINERY WANTED

WANTED TO BUY — RICHARDSON scales, bag closing machines and other good mill, feed and elevator equipment. J. E. Hagan Mill Machinery, Jefferson City, Mo.

Dr. Salsbury's Plans Series of Short Courses

CHARLES CITY, IOWA—A series of short courses has been arranged by Dr. Salsbury's Laboratories on poultry and turkey diseases. Each class will be a four-day course which will include practical education in diseases, management and training in service work.

The classes, all taught at the firm's headquarters at Charles City, Iowa, are scheduled as follows:

Jan. 31-Feb. 3, turkey class; Feb. 14-17, chicken class; March 6-9, chicken; March 27-30, chicken, and April 10-13, chicken.

A limited enrollment is accepted for each class.

A. E. Zupek

NAMED—A. E. Zupek has been appointed north central district sales manager for the Western Condensing Co., Appleton, Wis., according to an announcement by feed division sales manager M. J. Stack. Mr. Zupek will take over sales direction of the company's whey products in Nebraska, Iowa, Minnesota, Wisconsin and the Dakotas effective at once. He will headquarter in Wisconsin. A veteran of five years service with the company, Mr. Zupek was until recently Wisconsin territory representative. Earlier he served in an administrative capacity in the Appleton general offices.

KANSAS FEED CONFERENCE

(Continued from page 11)

limiting in linseed meal, cottonseed meal, peanut meal and distillers' solubles.

(2) For bred sows, feed costs were cut 28% by feeding either legume-grass silage (plus 0.6 lb. corn and 1 lb. supplement per head daily) or corn silage (plus 2 lb. supplement per sow daily).

(3) Palatable, nutritious, properly fortified pig starters containing 17 to 21% protein for creep feeding pigs 7 to 10 days until weaning are recommended. Five to 20% sugar mixed in the feed increases palatability.

(4) 1 to 1½% fat in the ration is adequate. Use of higher levels depends on the price relationships with other energy feeds such as corn and milo.

(5) In addition to niacin and Vitamins A and D, the following have significance in swine feed formulation: (a) Riboflavin — 1.4 mg. per pound of ration for baby pigs; 1.2 mg. for 25-lb. pigs and 1.0 mg. for pigs over 25 lb.; 1.2 mg. for gestation-lactation. (b) Pantothenic acid. 5.0 mg./lb. ration to 50-lb. weight and 4.5 mg. thereafter. (c) Vitamin B_{12}. 18 to 20 mg. per ton of dry ration are needed for baby pigs; 14 mg. per ton for 25-lb. pigs and 10 mg. for pigs 50 lb. and over. (d) Unidentified factors. The following ingredients are possible sources of unidentified factors, green pastures, alfalfa meal, grass juice concentrate, condensed fish solubles, dried whey, dried corn distillers' solubles, dried brewers yeast and some residues from fermentation and antibiotic production.

(6) Minerals. Over 1% calcium in the total ration is a predisposing factor in parakeratosis and zinc at the 50 to 100 p.p.m. level from zinc sulfate will prevent the occurrence of the disease. Calcium requirements are 0.8% for 25-lb. pigs, 0.65% for 50-100 lb. and 0.55% thereafter. All phosphorus sources except soft phosphate with colloidal clay were satisfactory in recent Purdue tests.

(7) Antibiotics. Little or no benefit for pregnant sows. No benefit for lactating sows, but since pigs feed along with sow there should be antibiotics in the ration. Weaning weights have been increased up to 11 lb. per pig by antibiotics for pigs and sows during lactation. Growing-fattening pigs on drylot or pasture show gains of 5 to 20% and 4-5% less feed is required. No significant effect on back fat, depth or length of body or percent of lean in carcass. The effective level for growing-fattening pigs is 5-6 mg. per lb. of ration (10-12 gm. per ton.) About four times this level is needed in supplement for free-choice feeding or mixing with grain.

Carcass Quality

A change in the pork meat-grading set-up by the USDA grading service and the stronger preference for meat-type hogs have led to experimentation on the effect of various growth factors on the amount of fat on hogs. Prof. Ralph P. Soule, Jr., of the department of animal husbandry spoke on factors affecting carcass quality of market pigs.

In 1952 Kansas State started a three year project on the effects of two antibiotics, Aureomycin and Terramycin, on the growth and carcass characteristics. The results in Table 4 and other data were discussed by Prof. Soule.

A big future in the feed business was predicted by a panel of retail feed merchants which started off the feed meeting Jan. 9. Retailer views were expressed on a number of current feed sales problems by Andy Johnson, Sedan (Kansas) Seed House; Alvin J. Wolfe, Wolfe Feed & Grain Co., Hiawatha, and William Nikl, William Nikl Produce, Colby. The moderator was Maurice Johnson, Staley Milling Co., Kansas City.

Some of the comments made were as follows:

Credit — Credit losses are very nominal. Credit is a tool for volume. Good idea to be liberal in credit to new customers. Large buyers generally are credit buyers. Watch credit accounts closely and review once a month. In a one-crop area where money is available in volume at a certain time of the year, it may be wise to let bankers handle credit. Sometimes credit customers try to avoid you, and this is not good for customer relations.

Resale—Resale men generally are not looked upon with favor by retailers. High pressure tactics are disliked. Doubt if resale men know local customers well enough to follow through with the service retailers have to offer. In a heavy feeding season their assistance in the area sometimes is appreciated.

Businessmen assistance—All panel members agreed that more could be done to get local businessmen interested in promoting feeding programs which would increase the general economy of the area.

Direct selling — A rather ticklish situation but one that must be contended with. Recognize the fact that big feeders may want to buy direct. Must be prepared to give the big feeder as much service as possible because the retailer is closer to the big feeder than most feed manufacturing plants. One opportunity to increase sales with big feeders is to offer custom grinding and mixing services for their grains.

Bulk—If the customer wants bulk, give him what he wants. Discourage it only if the customer is too far away from the manufacturing point.

Feeding programs — Should be stressed more. Sell the program rather than sell the feed.

Advertising—During slack periods or up to two days a week should be spent on advertising and promotion. This includes writing letters, using the telephone and working out direct mail and newspaper advertising for your sales area.

Specialty feeds—No reason to disapprove them if they are consumer-tested and have a good purpose.

Management Program

A unified program in feed management was presented to the conference by Lloyd S. Larson, executive vice president of the Midwest Feed Manufacturers Assn., Kansas City. Mr. Larson strongly recommended unified effort in promoting sound management practices similar to programs on layers which have been instituted in the past year in Oklahoma and Nebraska. The feed industry, extension service, vocational agricultural teachers and colleges should all tell the same management program at the same time. In this way we will serve the farmer better, Mr. Larson said.

A special speaker at the banquet held in the evening Jan. 9 was Joseph Burger, vice president and sales manager, Corneli Seed Co., St. Louis.

Chairman of the conference again this year was F. W. Atkeson, department of dairy husbandry, Kansas State College. Responsible for the popular set-up on exhibits and demonstrations were Paul E. Sanford of the department of poultry husbandry and Don B. Parrish, department of chemistry.

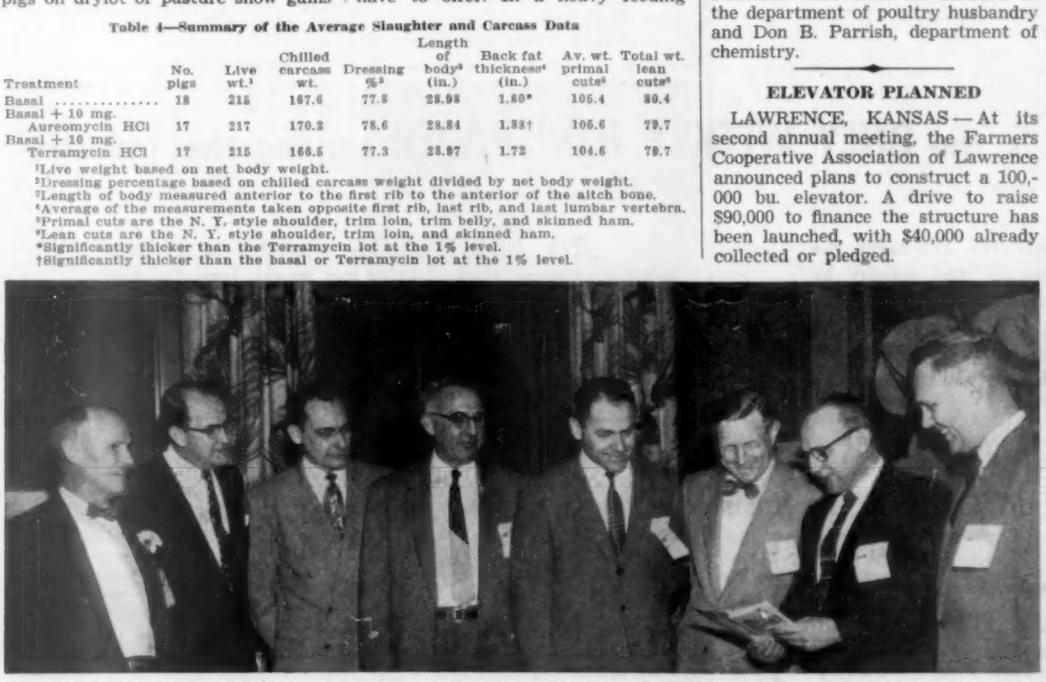
Table 4—Summary of the Average Slaughter and Carcass Data

Treatment	No. pigs	Live wt.[1]	Chilled carcass wt.	Dressing %[2]	Length of body[3] (in.)	Back fat thickness[4] (in.)	Av. wt. primal cuts[5]	Total wt. lean cuts[6]
Basal	18	215	167.6	77.8	28.98	1.80*	105.4	80.4
Basal + 10 mg. Aureomycin HCl	17	217	170.2	78.6	28.84	1.38†	105.6	79.7
Basal + 10 mg. Terramycin HCl	17	215	166.5	77.3	28.97	1.72	104.6	79.7

[1]Live weight based on net body weight.
[2]Dressing percentage based on chilled carcass weight divided by net body weight.
[3]Length of body measured anterior to the first rib to the anterior of the aitch bone.
[4]Average of the measurements taken opposite first rib, last rib, and last lumbar vertebra.
[5]Primal cuts are the N. Y. style shoulder, trim loin, trim belly, and skinned ham.
[6]Lean cuts are the N. Y. style shoulder, trim loin, and skinned ham.
*Significantly thicker than the Terramycin lot at the 1% level.
†Significantly thicker than the basal or Terramycin lot at the 1% level.

ELEVATOR PLANNED

LAWRENCE, KANSAS — At its second annual meeting, the Farmers Cooperative Association of Lawrence announced plans to construct a 100,000 bu. elevator. A drive to raise $90,000 to finance the structure has been launched, with $40,000 already collected or pledged.



KANSAS SPEAKERS—Some of the speakers at the recent Formula Feed Conference at Kansas State College get together with some of the men responsible for arranging the program. Left to right are F. W. Atkeson, head of the Kansas State dairy husbandry department and chairman of the conference; Lloyd Larson, Midwest Feed Manufacturers Assn., Kansas City; Dr. Gerald Combs, University of Maryland; Dr. L. A. Moore, dairy husbandry research branch, U.S. Department of Agriculture; Dr. Morris Erdheim, Dawe's Laboratories, Inc., Chicago; Dr. Harold L. Wilcke, Ralston Purina Co., St. Louis; William Diamond, American Feed Manufacturers Assn., Chicago, and Dr. Orville G. Bentley, Ohio Agricultural Experiment Station.

Julius Mayer

Julius Mayer Reelected Head of Chicago Exchange

CHICAGO — Julius Mayer, executive vice president of the Continental Grain Co. was reelected Jan. 16 to the presidency of the Chicago Board of Trade, Robert C. Liebenow, executive secretary, announced.

Mr. Mayer has been an official of the exchange for the past six years, having previously served in the posts of first and second vice president as well as director.

John E. Brennan of John E. Brennan & Co. was selected as first vice president. He served last year as second vice president and prior to that had been a director of the board for six years.

James F. Wade, Lamson Bros. Co., a director for the past three years, was elected to the second vice presidency.

Five directors elected to serve three year terms were: Bernard P. Carey, Peter B. Carey & Co.; Clarence M. Galvin, Francis I. duPont & Co.; Glenn S. Watkins, Pillsbury Mills, Inc.; Francis J. Coughlin, Rodman & Renshaw, and Ardin P. Buell, John G. McCarthy & Co.

Raymond A. Gerstenberg and Edward J. Keeley will fill three-year terms on the nominating committee.

Superior Dividend

MINNEAPOLIS—The Superior Separator Co., Hopkins, Minn., has declared a dividend of 30c a share on the 6% convertible preferred stock, 1952 series, and a 15c a share dividend on the common stock, both payable Jan. 31 to holders of record Jan. 15.

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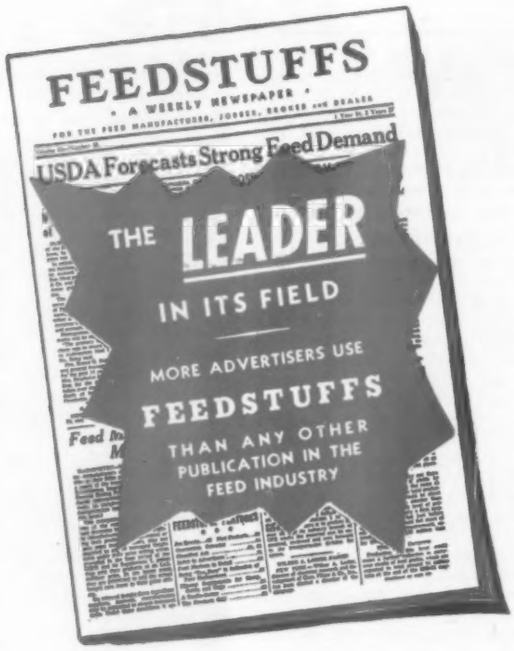

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FARM PROGRAM PROPOSALS

(Continued from page 1)

circles there are some misgivings as to its effect, notwithstanding the admonition in the bill that such sales be handled in such a manner as to minimize any adverse market effects. Usually such an admonition directed at an administrative agency is little more than a collection of pleasant, reassuring words, they say.

Approval Doubted

It is doubted that this provision of the bill will meet with congressional committee approval and may finally be deleted or drastically amended.

On setting up a new lower level for re-sale of CCC stocks, organized commodity markets are expected to again offer considerable opposition. In the past this level — of support price plus carrying charges—has been opposed by the commodity markets because it is said to freeze the market into a tight position which discourages trading in commodities, since it tends to fix a maximum price at which point CCC stocks would enter the markets and halt an advance in price beyond the statutory price formula.

Commodity markets in the past have been able to persuade Congress to set the re-sale value above the proposed formula since the additional 5% first kept CCC stocks out of competition with the farmer's new crop harvest and gave the farmer at least the chance to get a better price for his crop.

This is another provision which may find tough sledding.

If the new bill passes with this re-sale provision and with the authority for CCC to sell other stocks at market price to acquire cash for the certificates, it would appear there would be only one way for the markets to go—down.

It is feared that if the market price provision is retained, prices might fall so low that CCC would be able to bring in sufficient cash only if it sold extraordinarily large quantities of surpluses.

If that condition occurred, it is unlikely that USDA could make sales in such manner as to "minimize" adverse market effects.

If responsible USDA officials are to be believed, it is expected that the provision for the market re-sale of commodities to finance certificates will be eliminated, and the new statutory re-sale formula may be dropped also.

Follows Recommendations

The administration farm bill was introduced in Congress this week by George Aiken of Vermont, Republican Senate farm leader. In most respects it closely follows the White House farm message recommendations and the recommendations made orally by Mr. Benson before the Senate Agriculture Committee last week. Its chief aim is for the establishment of the soil bank through which Mr. Benson plans to bring surplus crop production in line with probable disposals.

Despite doubts expressed by Democratic senators that the soil bank can work on a voluntary basis, the administration bill retains the voluntary approach which Mr. Benson has steadily advocated. According to other USDA officials, the secretary believes if the incentive given to farmers to participate in the acreage reserve phase of the soil bank is adequate, farmers will find it profitable to cooperate.

Sen. Allen J. Ellender (D., La.), Senate Agriculture Committee chairman, told Mr. Benson that he believes mandatory further reductions in acreage allotments would be necessary, but he made other remarks that indicated he is still interested in compensating producers cooperating in the acreage reserve program through probable 90% of parity supports. Sen. Clinton P. Anderson (D., N.M.), also expressed doubt about effectiveness of the voluntary approach.

These doubts were expressed, however, before any disclosure of the extent of the incentive to be offered the farmer who cooperates.

Size of Incentive

For wheat, the USDA contemplates paying a farmer an incentive of not less than 50¢ bu. for the average yields of land taken out of production in excess of his allotment. For cotton a payment of not less than $50 per acre is being considered.

Producers who withdraw land from production in excess of their acreage allotments would be paid by CCC in negotiable certificates, the value of which, the bill says, would be at rates the secretary determines to be equitable and which would assure the cooperating farmers a fair and reasonable return for reducing acreage.

In this respect, the bill is somewhat unusual since it would grant wide discretion to the secretary in fixing the value of the certificates. In the past Congress has been reluctant to give such broad discretionary powers to a secretary since it has been feared that such power might become a political instrument to influence elections if the secretary chose to manipulate the certificate values for political purposes. This was one of the chief objections to the Brannan plan.

In this connection, Republican farm leaders said they did not see how the plan could be administered otherwise since any rigid fixed formula of certificate value could not be reached. The Senate bill does, however, set up some broad guides for establishing the certificate value.

It is learned that USDA officials contemplate setting up the basic certificate value on the support level, less production costs, plus some sizeable incentive payment.

USDA officials say the incentive must appear on the generous side since there are many fixed costs which carry on despite the fact that certain land is not put into production. Such costs would be machinery charges, taxes, land costs and others. The incentive must be great enough so that the farmer finds it as good or better for him to withdraw more good land.

Redeemable Two Ways

The government certificates would be redeemable either in cash or in kind from CCC surplus stocks. Commodities received in payments by a producer for his certificates would not be eligible for tender to CCC under price support programs.

USDA officials said that it would be hoped that most farmers would present their certificates for cash rather than for commodities to ease administrative problems within USDA.

As the Senate got the administration measure under S. 2949, a companion bill was also introduced in the House by Rep. Clifford Hope (R., Kansas)—HR. 8543. These bills are not exactly the same in some minor items but are alike insofar as the soil bank plan is concerned.

The Senate bill outlines the acreage reserve feature of the soil bank as planned to function for wheat, cotton, corn and rice. In so doing it rejects the Ellender recommendation that a two-price plan be used for the rice crop as a testing ground for this method. Consequently, it may be inferred that USDA does not plan to sponsor the two-price idea for wheat or other crops.

To participate in the acreage reserve program, a producer of these crops would be required to reduce his acreage below his farm acreage allotment but within limits prescribed by the Secretary. In another section of the measure there is a limit placed on payments at not more than $5,000 for land in any one state. This limitation is designed to prevent a farmer from taking all his land out of production. The Benson purpose is to spread the cooperation as widely as possible among all producers of these crops.

Land in excess of acreage allotments taken out of production may not be harvested for any other crop nor used for grazing.

The acreage reserve program would be effective for the crops of 1956-57-58-59 but the voluntary acreage reductions which might be accomplished could not exceed 30% of the national acreage allotment as provided in the AAA of 1938. Further limitation at the discretion of the Secretary could be imposed as to individual farm limits and as to the supply and demand conditions for different classes, grades and qualities of the commodity or such other factors which may appear appropriate. The bill aims at broad flexibility in this respect.

Wheat for Feed

This administration at USDA has looked eagerly in the past at the opportunity to dispose of some of its wheat surplus in feed channels. In this bill USDA is asking Congress for specific authority to sell not more than 100 million bushels of less desirable milling wheat for feed. Practical grain folks look dimly at this prospect saying that it will not be effective in face of bulging supplies of other feed grains.

USDA suspects that it may sell some feed grains on the East and West Coasts. Grain trade spokesmen say that West Coast barley stocks will take the first call and if the non-commercial wheat area is expanded as is now proposed in the administration measure, it would seem likely that wheat for feed would come from this part of the wheat crop which would be as non-commercial wheat area stocks supported at only 75% of the support level of the commercial area—possibly available for East Coast feeding use.

Subject to some give-and-take, the administration measure seems likely to be approved by the Senate Agriculture Committee along its present lines. Certain modifications as noted will be made and some concessions possibly offered assuring its approval and probable passage on the Senate floor.

The big committee controversy will be over the incentive value of the certificates for the soil bank. Possibly there may be a drive to make the acreage reserve program mandatory.

William F. Jacobi

APPOINTED—William F. Jacobi has been appointed director of the Union Bag & Paper Corp.'s newly created package engineering department. This department consolidates the company's packaging services and packaging machinery departments. John F. Hordych has been named assistant director of the department.

J. Thomas Haigh

Strong-Scott Names Marketing Director

MINNEAPOLIS — The appointment of J. Thomas Haigh as director of marketing was announced recently by Lucian Strong, president of the Strong-Scott Manufacturing Co., manufacturer of equipment for the grain, feed and milling industries.

Mr. Haigh will head the new marketing division which will direct Strong-Scott's entry into the chemical processing equipment field, as well as the expansion of the present new-product development program for the milling and feed industries. In addition to its equipment for size reduction, separation, mixing and conveying operations, Strong-Scott will offer, under the new program, custom-built equipment specifically engineered and designed for customer processes and problems.

Mr. Haigh has a broad background in the grain and chemical processing industries. He was formerly technical sales director of the mechanical division of Pillsbury Mills, Inc., and sales and advertising manager of the Schutz-O'Neill Co. of Minneapolis. He is a chemical engineer with design, development and market research experience. He comes to Strong-Scott from General Foods Corp., where he was manager of research and development of the corn mill division in Kankakee, Ill.

He is a member of various chemical and other scientific organizations, and has been active in the Association of Operative Millers and other groups.

Fish Meal Production Shows 2% Decline

WASHINGTON — The October, 1955 production of fish meal and scrap by U.S. and Alaskan firms which normally accounts for about 90% of the total output amounted to 17,542 tons compared with 17,903 tons for October, 1954. This represents a decrease of 361 tons or 2%, according to the U.S. Department of the Interior.

The production of condensed fish solubles during October, 1955, amounted to 6.9 million pounds compared with 15.0 million pounds reported for the same month of 1954. The production of homogenized condensed fish during October totaled 3.8 million pounds compared with 5.8 million pounds produced during October, 1954. This was a decrease of 54% in the output of condensed fish solubles and 34% in the production of homogenized condensed fish.

Imports of fish meal during September, 1955, amounted to 4,376 tons compared with 5,941 tons which entered during the same month in 1954. During the first nine months of 1955, 72,193 tons of meal were imported compared with 123,850 tons during the same period of 1954—a decrease of 42%.

THE FEED MARKETS

★ ★ ★ ★

Demand — Supply — Trends — Prices

Quotations on feed ingredients shown in these and adjoining columns are wholesale prices, per ton, bagged, for prompt delivery, unless otherwise noted. They are the latest quotations available from Feedstuffs correspondents and are not necessarily those in effect on date of publication. The prices represent fair average trading values and do not necessarily represent extreme low or high levels at which individual sales might have occurred. A descriptive summary of supply and demand factors prevalent in the feed market appears on page 2.

ALFALFA MEAL

Ft. Worth: Demand fair; offerings increasing; dehydrated, 17% protein, 50,000 A 1947, basis f.o.b. Plainview area; northern origin 100,000 A $60@62.50, delivered Ft. Worth, depending on origin of tonnage. January shipment.

Memphis: Demand fair; trend steady; supply ample; dehydrated, 17% protein, guaranteed 100,000 units vitamin A $58.

Cincinnati: Demand fair; trend steady; supply adequate; 17% dehydrated, 100,000 vitamin A $61.55@67.55; 17% dehydrated, no A $51.55; 13% fine suncured $37@50.

Seattle: Demand slow; trend firm; supply sufficient; 15% protein suncured $50 ton, 136,000 A unit dehydrated $65 ton, both delivered, carlots.

Kansas City: Market still holding about steady with demand fair to good and offerings adequate; blended quotations for 17% dehydrated alfalfa meal with 100,000 units of vitamin A guaranteed on arrival $57, sacked, Kansas City; straight run offerings $50@52, sacked, Kansas City; no A $41@43, sacked, Kansas City; no change in suncured prices.

Buffalo: Demand fair; trend steady to higher; supply adequate; $73, sacked, Boston.

Omaha: Demand fair; trend improving; supply adequate; 17% dehydrated, non A $44 bulk, $47 sacked; 17% dehydrated, 100,000 A $48 bulk, $51 sacked.

St. Louis: Demand for dehydrated fair, suncured slow; trend weak; supply of dehydrated limited, suncured adequate; dehydrated 17%, 100,000 A $56 ton; suncured No. 1 fine ground, 13% $44 ton, f.o.b. St. Louis.

Minneapolis: Demand was just fair to some easier; price quotations were steady to lower; 17% dehydrated, 100,000 units of vitamin A guaranteed $54@58.50; granules and oil treated $60.50 (bulk $3 ton less); non-guaranteed $46@46.50; 15% suncured $42@43.

Chicago: Demand slow; supply adequate; 17% dehydrated, with 100,000 units vitamin A guaranteed $55.50@56; 17% with no A guaranteed $47@47.50; 15% dehydrated, no A $44.50@45; 13% fine ground suncured $42.50@44.

Los Angeles: Demand fair; trend steady; supply ample; 15% suncured $44.50; 17% dehydrated $50@51.

New Orleans: Demand fair; trend steady; supply ample; 17% dehydrated vitamin A guaranteed $59@62; non-guaranteed $55@58; 15% $52@55.

Boston: Demand light; supply fair; dehydrated, 17% $66; suncured, 13% $51@54.

Portland: Demand good; trend firm; supply limited; 15% suncured $50, delivered Portland; 15% suncured $45, delivered California; dehydrated $50, delivered California.

Philadelphia: Demand dull; supply fair; 17% dehydrated $65.

ALFALFA PELLETS

Omaha: Demand fair; trend improving; supply ample; 17% dehydrated, non A, papers or burlaps $42@44; 17% dehydrated, 100,000 A, papers or burlap $50; 17% dehydrated, 100,000 A, greased, papers or burlap $52; No. 1 fine ground suncured, papers or burlap $40; No. 1 ¼-in. burlap $37; No. 2 ¼-in. burlap $34.

BARLEY FEED

Boston: Demand slow; supply ample; $45.

Portland: Demand good; supply ample; trend unchanged; rolled $59, ground $57.

Philadelphia: Demand and supply fair; pulverized $48.

Ogden: Supply average; rolled $45@50; whole $38@43.

Baltimore: Demand improved; supply adequate; $46.

Chicago: Demand improved; supply adequate; $37.

Seattle: Demand and trend steady; supply good; whole $58 ton, ground $58 ton, rolled $59 ton, all ex-warehouse, l.c.l., sacked.

Los Angeles: Demand moderate; trend steady; supply ample; standard rolled $2.94, standard ground $2.90.

New Orleans: Demand slow; supply ample; trend steady; $48@56.

San Francisco: Demand fair; supply ample; rolled $60.50, ground $59.50.

BENTONITE (SODIUM)

Chicago: Demand very good; supply adequate; f.o.b. Wyoming and South Dakota shipping points: granular, 30 mesh $15.50; fine granular, 80-100 mesh $12.75; powder, 200 mesh $12.50; f.o.b. Belle Fourche, S.D., minimum 30-ton carlot: 80 granular $12.50 net; 200 mesh fine $12.25 net.

BLOOD FLOUR

Louisville: Demand slow; trend unsettled; supply good; $80@85 ton.

New Orleans: Demand slow; supply adequate; trend steady; $85@90.

BLOOD MEAL

Cincinnati: Demand poor; trend steady; supply adequate; $120.

New Orleans: Demand fair; trend steady; supply ample; $85@90, local origin.

Louisville: Demand slow; trend unsettled; supply good; $80@85 ton.

Seattle: Demand slow; trend easy; supply good; $85 ton, f.o.b. local packing plants, trucklots.

San Francisco: Demand slow; supply ample; $4.85 a unit of ammonia; screened $4.75 a unit of ammonia.

Chicago: Demand slow; supply adequate; $115@117.50 ton, guaranteed 80% protein.

Los Angeles: Demand fair; trend steady; supply ample; $4@4.25 a unit of ammonia.

Portland: Demand good; supply ample; trend unchanged; $110.

Ogden: Demand firmer; supply normal; $97.50 ton in 100-lb. bags, f.o.b. Ogden.

BONE MEAL

New Orleans: Demand good; trend higher; supply sufficient; $82.50@85.

Louisville: Demand dull, trend steady; supply ample; $70@75 ton.

Ft. Worth: Demand fair; supply sufficient; $85 sacked, f.o.b. Ft. Worth, local manufacture.

Omaha: Demand slow; supply ample; $80.

Cincinnati: Demand fair; trend steady; supply adequate; $80 ton, sacked, f.o.b. Cincinnati.

San Francisco: Demand good; supply fair; $58.

BONE MEAL (STEAMED)

Ft. Worth: Demand improved; supply very limited; Egyptian production, 14% phosphorus, 31% calcium $73, 100-lb. paper-lined burlaps, f.o.b. Houston.

Seattle: Demand steady; trend firm; supply limited; $85 ton, ex-warehouse, l.c.l.

Boston: Demand slow; supply fair; $86.

Portland: Demand slow; supply ample; trend unchanged; $90.

St. Paul: Market unchanged at $75 in large lots.

Chicago: Demand slow; supply adequate; $65@85.

Buffalo: Demand good; trend steady; supply ample; $85 ton, sacked.

St. Louis: Demand good; trend firm; supply adequate; $90@92 ton, sacked.

Louisville: Demand slow; trend steady; supply ample; $75@80 ton.

New Orleans: Demand slow; supply limited; trend steady; $80@85.

Los Angeles: Demand fair; trend steady; supply ample; domestic $89.50.

San Francisco: Demand good; supply ample; $82.50.

BREWERS DRIED GRAINS

Ft. Worth: Demand fair; supply moderate; 25% nominal $59@60, prompt, delivered Ft. Worth.

Cincinnati: Demand fair; trend steady; supply adequate; $59.50.

Buffalo: Demand good; trend steady to higher; supply adequate; $56, bulk, Boston.

Chicago: Demand good; supply tight; 24% $52.50@53.

St. Louis: Demand good; trend firm; supply limited; $47 ton, bulk; $52 ton, sacked.

Los Angeles: Demand fair; trend steady; supply ample; f.o.b. Van Nuys $54.

Louisville: Demand fair; trend stronger; supply ample; $49.

New Orleans: Demand fair; trend steady to higher; supply adequate; $56@60 on 24%.

Philadelphia: Demand dull; supply light; $61.

Boston: Demand steady; supply adequate; 26% $60.75, 22% $58.

BREWERS DRIED YEAST

Boston: Demand light; supply steady; 11@11½¢ lb.

Portland: Demand slow; supply ample; trend unchanged; 13¢.

Omaha: Demand good; supply limited; 11½¢ lb., carloads; 12½¢ lb., less than carloads.

Buffalo: Demand good; trend firmer; supply limited; $10.95 cwt.

Chicago: Demand good; supply limited; 10@11½¢ lb. in carlots; 10¼@12½¢, l.c.l.

Milwaukee: Demand good; supply limited; 10½@11½¢ lb. in carlots; 10¾@12½¢ lb., l.c.l.

St. Louis: Demand good; supply limited; 10¢ lb. in carlots; 10½¢ lb. in 5-ton lots; 11¢ lb. in ton lots; 11½@12¢ lb. in less than ton lots.

Pittsburgh: Carlots 10¢ lb.; 5-ton lots 11¢; ton lots 11½¢.

New Orleans: Carlots 10¢ lb.; 5-ton lots 11¢; ton lots 11½¢.

Cincinnati: Carlots 10¢ lb.; 5-ton lots 11¢; ton lots 11½¢.

New York: Carlots 9½¢ lb.; 10-ton lots 10¢ lb.; 5-ton lots 10½¢ lb.; ton lots 11¢ lb., f.o.b. New Jersey.

Los Angeles: Demand good; trend steady; supply limited; 10¢.

Louisville: Demand fair; trend firm; supply normal; 10¢ lb.

San Francisco: Demand fair; supply good; 10½¢ lb.

BUTTERMILK-CONDENSED

San Francisco: Demand fair; supply good; $5.35 cwt.

New Orleans: Demand fair; trend steady; supply adequate; $4.50@5.25.

Los Angeles: Demand fair; trend steady; supply ample; 100-lb. drums $5.50; large barrels $4.75.

Ogden: Supply normal; $4.90, 100-lb. drum.

Portland: Demand slow; supply ample; trend unchanged; $4.75.

Boston: Demand poor; supply ample; 4¢ lb.

Philadelphia: Demand and supply fair; $4.25.

Chicago: Demand steady; supply fair; $3.50@3.75 cwt. in carlots.

CALCITE CRYSTALS AND FLOUR

(All prices net, including freight and tax)

New York: Crystals $12.48, flour $9.42.
Buffalo: Crystals $14.20, flour $10.20.
Toledo: Crystals $15.77, flour $11.77.
Boston: Crystals $14.62, flour $10.62.
Limecrest, N.J.: Crystals $9.50, flour $5.50.

CALCIUM CARBONATE

Cincinnati: Demand fair; trend steady; supply adequate; $8@9.

Seattle: Demand steady; supply ample; trend unchanged; $14 ton, ex-warehouse, truck lots.

Minneapolis: Plain $10; iodized (⅛ lb. KI per ton) $13.50; iodized manganesed $15.05.

Chicago: Plain $8.55 ton in 100-lb. bags, delivered.

Los Angeles: Demand fair; trend steady; supply ample; meal and flour $10.53 ton, carloads; grits $13.03 ton, carloads.

CHARCOAL

Los Angeles: Demand slow; trend steady; supply ample; poultry charcoal, oak, 40-lb. bags in ton lots $2.40.

Chicago: Demand quiet; supply limited; poultry charcoal $102 ton in 50-lb. multiwalls.

New Orleans: Demand slow; supply ample; trend steady; 40-lb. bags oak charcoal $2.40; 50-lb. bags poultry charcoal $2.65.

San Francisco: Demand steady; supply ample; $59.50.

Boston: Demand slow; supply adequate; $95.

COCONUT MEAL

Portland: Demand slow; supply ample; trend unchanged; $70.

Seattle: Demand slow; trend steady; supply limited; $70 ton, ex-dock, 30-day shipment from Philippines.

Los Angeles: Demand and trend steady; lighter offers; cake, ex-dock, January-February $68.50@69.

San Francisco: Demand fair; supply ample; solvent $63, expeller $68.

COD LIVER OIL (FORTIFIED)

Boston: Demand slow; supply good; 600 D, 2,250 A 22¢ lb.; 300 D, 2,250 A 21¢; 300 D, 1,500 A 18½¢.

New York: Trend steady; price per lb. in 55-gal. drums (400 to 420 lb.): 300 ICU, 750 A 16@18¢, 1,500 A 17½@19½¢, 2,250 A 19@22¢, 3,000 A 19½@23¢; 600 ICU, 1,500 A 18@19½¢, 2,250 A 20@23¢, 3,000 A 22@23½¢; f.o.b. Massachusetts, New York, New Jersey or Pennsylvania. Ranges include variance in offerings and f.o.b. shipping points.

Dayton: Trend steady; price per lb. in 55-gal. drums (410 lb.): 300 ICU, 1,500 A 19½¢, 2,250 A 20½¢, 3,000 A 21½¢; 600 ICU, 1,500 A 20½¢, f.o.b. Dayton.

CONDENSED FISH SOLUBLES

Boston: Demand active; supply fair; 4¢ lb.

Los Angeles: Demand good; trend steady; supply limited; 5¢.

CORN GERM MEAL

St. Louis: Demand good; trend steady; supply limited; $44 ton bulk, $49 ton in burlap sacks, St. Louis.

CORN GLUTEN FEED AND MEAL

(All quotations for all cities are sacked basis, bulk basis $5 less)

Minneapolis: Feed $51.77, meal $69.77.
Atlanta: Feed $58.92, meal $76.92.
Birmingham: Feed $57.18, meal $75.18.
Boston: Feed $56.15, meal $74.15.
Chicago: Feed $46, meal $64.
Cleveland: Feed $53.04, meal $71.04.
Denver: Feed $55, meal $73.
Ft. Worth: Feed $53.50, meal $71.50.
Indianapolis: Feed $50.50, meal $68.50.
Kansas City: Feed $48, meal $64.
Louisville: Feed $52.11, meal $70.11.
New Orleans: Feed $54.88, meal $72.88.
New York: Feed $55.69, meal $73.69.
Norfolk: Feed $55, meal $73.
Philadelphia: Feed $55.23, meal $73.23.
Pittsburgh: Feed $53.50, meal $71.50.
St. Louis: Feed $46, meal $64.

CORN OIL MEAL

Louisville: Demand slow; trend firm; supply normal; $53.50.

Cincinnati: Demand fair; trend steady; supply adequate; $53.88@54.88.

New Orleans: Demand dull; trend steady; supply adequate; $53.88@54.88.

COTTONSEED OIL MEAL

Kansas City: Trend is easier with demand fair and offerings somewhat improved; for old process $56.50@57, sacked, Memphis; solvent $56@56.50.

Memphis: Demand dull; trend steady; supply tight; prime 41% protein, old process $58; new process, 41% solvent $58, sacked.

Ft. Worth: Demand slackened; offerings extremely light; carlots, sacked, central and north Texas origin, 41% old process $65.50; solvent, 41% low gossypol, fat added $62@62.50, delivered Ft. Worth, January; pellets $2 additional.

Cincinnati: Demand fair; trend steady; supply adequate; $67@68.50.

Los Angeles: Demand moderate; trend steady; supply ample; $63.

Seattle: Demand slow; trend firm; supply good; $30 ton, delivered, carlots, 41% expeller process.

Louisville: Demand fair; trend easy; supply ample; new process $63.30; old process $65.80.

Wichita: Demand slow; supply ample; 41% $67.50.

New Orleans: Demand fair; trend steady; supply adequate; 41% old process $74.88 @77.

San Francisco: Demand good; supply ample; expeller $68.45; solvent $67.46.

Boston: Demand steady; supply adequate; $75.

Portland: Demand slow; trend lower; supply ample; $62, f.o.b. Los Angeles.

Ogden: Supply normal; 41% $63@73.

Philadelphia: Demand dull; supply fair; $72.50.

Omaha: Demand fair; supply adequate; 41% solvent $71, pellets $73.50.

Atlanta: Demand good; trend strong; supply limited; 41% $60, sacked, immediate.

Buffalo: Demand fair; trend higher; supply adequate; $74.50, sacked, Boston.

Chicago: Demand fair; supply tight on nearby; hydraulic $68.50@69; solvent $67.50 @68.

A AND D FEEDING OIL

Boston: Demand slow; supply ample; 600 D, 1,500 A 17¢ lb.; 300 D, 2,250 A 18¢; 300 D, 1,500 A 16¢; 300 D, 750 A 15¢.

New York: Trend steady; price per lb. in 55-gal. drums (400 to 420 lb.): 300 ICU, 750 A 13½@17½¢, 1,500 A 15½@19½¢, 2,250 A 17½@21½¢, 3,000 A 19½@21¢; 600 ICU, 1,500 A 16@20½¢, 2,250 A 18@19½¢, 3,000 A 20@25¢; f.o.b. Massachusetts, New York, New Jersey or Pennsylvania; ranges include variance in offerings and f.o.b. shipping points.

Minneapolis: All with DPPD—10,000 A 38¢ lb.; 300 D, 2,250 A 20¢ lb.; 300 D, 1,500 A 18¢ lb.; 300 D, 750 A 16¢ lb.

Buffalo: Demand steady; supply adequate; 300 D, 750 A 18½¢ lb.; 300 D, 1,500 A 20½¢ lb.; 300 D, 2,250 A 23½¢ lb.; 300 D, 3,000 A 26½¢ lb.; 600 D, 4,000 A 31¢ lb.; straight vitamin A feeding oil 10½@11½¢ per M. U., drum lots, drums included, basis Buffalo.

Chicago: Demand fair to good; supply adequate; straight A feeding oil, with 10,000 units vitamin A per gram 8@9½¢ a million units of vitamin A, l.c.l., packed in 55 gal. drums, f.o.b. Chicago, drums included.

Dayton: Trend steady; price per lb. in 55-gal. drums (410 lb.): 300 ICU, 750 A 18¢; 1,500 A 21¢, f.o.b. Dayton.

Seattle: Demand and trend steady; supply ample; 300 D, 2,250 A 22¢ lb.; 300 D, 1,500 A 19¢ lb.; 300 D, 750 A 17¢ lb.; all ex-warehouse, drums included.

D ACTIVATED ANIMAL STEROL, POWDERED

Cincinnati: Demand poor; trend steady; supply ample; 1,500 ICU 11¢; 3,000 ICU 18¢, warehouse.

Kansas City: Demand fair; trend steady; supply adequate; 10½@11¢ lb.

New York: Trend steady; price per lb. in 50- and 100-lb. bags or 100-lb. drums: 1,500 ICU 10@13.6¢ bagged, 11@12¢ drums; 3,000 ICU 16@19¢ bagged, 17@18¢ drums; f.o.b. New York and New Jersey.

DEFLUORINATED PHOSPHATE

Tupelo, Miss.: $49.50.
Houston: 18% $59.50.
Wales, Tenn.: $62.10.
Coronet, Fla.: Minimum phosphorus 17%, minimum calcium 34%, maximum fluorine .17% $56 net ton, f.o.b. Coronet in 100-lb. multiwall bags, $54 in bulk; minimum phosphorus 14.5%, minimum calcium 34%, maximum fluorine 0.145% $48 net ton, f.o.b. Coronet, in 100-lb. multiwall bags, $46 in bulk.

DICALCIUM PHOSPHATE

Cincinnati: 18% phosphorus $78@81.50.
Portland: Demand good; supply ample; trend unchanged; $96.
Minneapolis: 18.5% phosphorus, 24% calcium granular or fine ground $82.99 ton, delivered; $3 ton less in bulk.
Trenton, Mich.: Minimum phosphorus 21%, maximum fluorine .01% guaranteed $84, f.o.b. Trenton, in 100-lb. multiwall bags; minimum phosphorus 18½%, maximum fluorine .01% guaranteed $74, f.o.b. Trenton in 100-lb. multiwall bags.
East St. Louis: Monocalcium or dicalcium phosphate, 18½% phosphorus $74 ton, bagged, f.o.b. cars.
Adams, Mass.: Minimum phosphorus 18½%, minimum 25% calcium, maximum .01% fluorine guaranteed $74 ton, f.o.b. Adams, in 100-lb. multiwall bags. Freight equalized with nearest producing point, carload basis.
Columbia, Tenn.: Minimum phosphorus 18½%, minimum 25% calcium, maximum .01% fluorine guaranteed $74 ton, f.o.b. Columbia, in 100-lb. multiwall bags. Freight equalized with nearest producing point, carload basis.
Bonnie, Fla.: Demand improving; supply adequate; minimum phosphorus 18½% granular $74. Freight equalized with closest dicalcium phosphate producing point, carload basis.
St. Louis: Minimum phosphorus 18½%, maximum fluorine .01% guaranteed $74, f.o.b. St. Louis in 100-lb. multiwall bags.
Chicago: Demand fair; supply adequate; stock feed grade, 18.5% phosphorus, 20,000 lb. or more $74 net ton in 100-lb. papers, basis Chicago Heights, Ill.; less than 20,000 lb. $79 net ton; 21% phosphorus 20,000 lb. or more $84 net ton, basis Chicago Heights and Nashville, Tenn., less than 20,000 lb. $89 net ton.

DISTILLERS DRIED GRAINS

Boston: Demand slow; supply good; Canadian, light $55, bulk; domestic, light $61, bulk.
Philadelphia: Demand and supply fair; $63.50.
Buffalo: Demand very good; trend higher; supply scarce; $59@60, nominal, bulk, Boston.
New Orleans: Demand poor; trend steady; supply sufficient; $53@55.
Cincinnati: Demand fair; trend steady; supply adequate; $64@65.
Louisville: Demand good; trend firm; supply light; large producers sold up into February; bourbon grains, light $52, dark $53, solubles $76.
San Francisco: Demand fair; supply ample; $57.50; solubles $80.

DRIED BEET PULP

Ft. Worth: Demand slow; supply moderate; carlots, 50-lb. papers $66@67, delivered Ft. Worth, January shipment.
New Orleans: Demand fair; trend steady; supply adequate; $56.88@60.88.
Atlanta: Demand slow; trend steady; supply limited; $72.50, sacked, immediate.
Boston: Demand active; supply adequate; $66@66.50 cwt. in 50-lb. paper sacks; burlap, 100 lb. $67@68.
Cincinnati: Demand poor; trend steady; supply adequate; $61@64.
Chicago: Molasses pulp quoted at about $58.
Seattle: Demand good; trend strong; supply tight; $64 ton, delivered, California production; no local supplies available.
Los Angeles: Demand and trend steady; supply ample; $56.47, paper bags.
San Francisco: Demand good; supply fair; $52.35.
Ogden: Supply normal; $45@50 ton.

DRIED BUTTERMILK

Ft. Worth: Demand fair; supply extremely limited; local production $12 cwt., f.o.b. Ft. Worth.
Boston: Demand poor; supply short; 11½¢ lb., nominal.
Los Angeles: Demand fair; trend steady; supply ample; $13.75.
Wichita: Demand slow; supply adequate; $8.25 cwt.
Buffalo: Demand fair; trend steady; supply limited; $10.75 cwt.
Chicago: Demand improved; supply tighter; $10.25@10.50 cwt. in carlots.
Minneapolis: Market steady to easier at $9.50@10.50 cwt.
Ogden: Supply normal; $8.65, 100-lb. bag.

San Francisco: Demand fair; supply ample; $13.75 cwt.

Louisville: Demand fair; trend firm; supply normal; $10.50@11.25 cwt.

New Orleans: Demand good; trend easier; supply limited; $10.50@11.50 cwt.

DRIED CITRUS PULP

Boston: Demand light; supply good; $50; Florida points $30, f.o.b.

Los Angeles: Demand good; trend steady; supply scarce and no offers; f.o.b. southern California producers' plants: orange $48 sacked, $45 bulk.

Atlanta: Demand fair; supplies ample on pulp, limited on meal; trend steady; pulp $41.50, meal $41.50, sacked, immediate.

Buffalo: Demand increasing; supply improving; trend steady; $32.50, f.o.b. Florida points.

New Orleans: Demand good; trend steady; supply adequate; $54@55.

San Francisco: Demand good; supply fair; meal $55.

DRIED SKIM MILK

Portland: Demand good; supply ample; trend unchanged; $12.50.

Boston: Demand poor; supply plentiful; 12¢ lb., nominal.

Philadelphia: Demand good; supply fair; $17.

Buffalo: Demand fair; trend steady; supply ample; $10.85 cwt.

Chicago: Demand steady; supply adequate; $11.50 cwt. in carlots.

Minneapolis: Market steady at $11.50@12.

Louisville: Demand fair; trend firm; supply ample; $12@12.25 cwt.

Cincinnati: Demand fair; trend steady; supply adequate; $11.50@12.25 cwt.

New Orleans: Demand fair; trend steady; supply ample; $12@12.25 cwt.

Los Angeles: Demand fair; trend steady; supply ample; $13.75.

San Francisco: Demand and supply fair; 13½¢ lb.

DRIED WHEY

Cincinnati: Demand fair; trend steady; supply adequate; $6.

Ft. Worth: Demand fair; supply adequate; carlots, standard $6 cwt., sacked, delivered Ft. Worth or any Texas point or in ton lots, f.o.b. warehouse, Ft. Worth.

New Orleans: Demand fair; trend steady; supply adequate; $6@6.15 cwt.

Kansas City: Demand fair; trend steady; supply moderate; straight grade $6 cwt.; partially delactosed $6.50.

Seattle: Demand steady; supply good; trend unchanged; $7 cwt., ex-warehouse, l.c.l.

Louisville: Demand fair; trend firm; supply normal; $6@6.50 cwt.

Los Angeles: Demand fair; trend steady; supply ample; fortified $6.15, unfortified $6.

San Francisco: Demand steady; supply good; $6 cwt.

Portland: Demand good; supply ample; trend unchanged; $6.50.

Ogden: Supply normal; $6.90, 100-lb. bag.

Boston: Demand poor; supply plentiful; 6¢ lb., nominal.

Philadelphia: Demand and supply fair; $6@6.25.

Buffalo: Demand fair; trend steady; supply adequate; $6 cwt., delivered.

Chicago: Demand steady; supply scarcer; $6 cwt. in carlots.

Minneapolis: Market unchanged at $5.25@5.75 cwt.

FISH MEAL

Portland: Demand slow; supply ample; trend unchanged; $2.20, f.o.b. Vancouver; $2.40, f.o.b. California.

Ft. Worth: Demand fair; supply sufficient for nearby pickup; pilchard fullmeal 63% protein, solubles added back $167; 60% protein Angola $151.50, f.o.b. Houston, January.

Cincinnati: Demand fair; trend steady; supply adequate; $160@170.

Boston: Demand good; supply short; $153@155.

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Atlanta: Demand fair; supply ample; trend steady; 60% $162, sacked, immediate.

Buffalo: Demand good; trend steady; supply limited; 60% protein menhaden $162 bulk, $165 sacked.

Chicago: Demand slow; supply adequate to demand; menhaden fish meal, 60% protein, f.o.b. East Coast $150@154 ton; 60% blended, West Coast $140; Northwest herring-salmon blend $140; herring meal 72% protein $3.10@3.15 a unit of protein.

Minneapolis: Market about steady; 60% $160; 70% herring $2.15 a unit of protein, West Coast.

Ogden: Supply average; $2.20 a unit, f.o.b. Coast; 65% $171@173.

Los Angeles: Demand good; trend steady; supply light; $2.35 a unit of protein.

San Francisco: Demand slow; supply ample; $2.45 a unit of protein.

Seattle: Demand fair; trend steady; supply good; Canadian herring meal $2.25 a unit protein, carlots; local and blended meal $2.30 a unit protein.

Louisville: Demand fair; trend firm; supply ample; $160@170 ton.

New Orleans: Demand good; trend lower; supply sufficient; 60% $155@162.

HAY

Louisville: Demand better; trend steady; supply good; snow and ice this week helping retail demand, and slightly improving general demand; jobbers quoting all No. 1 hays, such as timothy, alfalfa, clover or mixed clover and timothy or other mixes, at around $30 ton or less; lespedeza $25 tops; straw $13@14.

Ft. Worth: Demand fair for alfalfa, practically all for others; supply sufficient; carlots, baled, No. 1 alfalfa $38@40, No. 2 $36@38; prairie, No. 2 $26@28; Johnson grass, No. 2 $24@26, delivered TCP.

Cincinnati: Demand slow; trend steady; supply adequate; No. 1 timothy (new) $21; first cutting No. 1 alfalfa (new) $21, second cutting $25; fancy No. 1 clover and timothy mixed $27; No. 1 red clover $22; bright wheat or oat straws $18.

Wichita: Demand slow; supply plentiful; prairie $18@22, alfalfa $22@26.

Seattle: Demand heavy; trend strong; supply tight; $50 ton, delivered, for U.S. No. 2 green.

Buffalo: Demand very weak; No. 2 timothy $18 ton; No. 2 alfalfa $25@28; straw, strong $12@15.

St. Louis: Demand good; trend firm; supply ample; No. 1 timothy $25@28 ton; No. 1 prairie $25@28 ton; No. 1 alfalfa $25@28 ton; No. 1 clover $18@20 ton; straw $14@15 ton.

Los Angeles: Demand fair; trend steady; supply ample; U.S. No. 1 $33.50@34.50; U.S. No. 2, leafy $31.50@33.50; U.S. No. 2 green $31@32; U.S. No. 2 $29@30.

New Orleans: Demand slow; trend weaker; supply adequate; timothy and clover $28@30; baled alfalfa $36@38; prairie $28@30.

Ogden: Supply normal; $1.25 bale; $24@30 ton in the barn.

Philadelphia: Demand and supply fair; as to quality $32.

Boston: Demand steady; supply plentiful; No. 2 timothy $35; second cutting alfalfa $47.

HOMINY FEED

Cincinnati: Demand fair; trend steady; supply adequate; $49.50@50.50.

Boston: Demand slow; supply plentiful; $52, bulk.

Omaha: Demand good; supply short; $41 bulk, $46 sacked.

Buffalo: Demand good; trend downward; supply adequate; $53.25, bulk, Boston; $1 less for February.

Chicago: Demand good; supply limited; $47.50@48.

Seattle: Demand slow; trend steady; supply ample; $61 ton, delivered, sacked.

Memphis: Demand poor; trend steady; supply ample; white $45, yellow $49.

Kansas City: Demand fair; offerings light; trend steady; $46.50@46, sacked, Kansas City.

Louisville: Demand fair; trend stronger; supply normal; $49.60.

New Orleans: Demand fair; trend easier; supply sufficient; $44.88@45.50.

LINSEED OIL MEAL

Wichita: Demand fair; supply sufficient; 34% $81.

Ft. Worth: Demand fair; supply adequate; carlots, 36% or better $78.82 January.

Minneapolis: The market was off some this week; 36% January forward $56@56.50, bulk, Minneapolis; 22% flaxseed screenings oil feed $41.50, bulk, Minneapolis.

ary, $77.82 February through June, delivered Ft. Worth; pellets $2.50 premium.

San Francisco: Demand and supply fair; $71.

Louisville: Demand fair; trend easy; supply normal; new process $72.85, old process $78.35.

Seattle: Demand slow; trend firm; supply good; 36% solvent process $88 ton, delivered; 30% expeller process $81 ton, delivered.

Omaha: Demand fair; supply adequate; 34% expeller $75.50, pellets $78; 36% solvent $69.50, pellets $72.

Chicago: The softness of the linseed oil meal market continued during the week ending Jan. 18. Buying on the part of feed manufacturers continued at a low level, and did not accommodate available supplies. Quotations Jan. 18: solvent linseed oil meal $66@66.50; expeller $73@73.50.

Kansas City: Market steady to slightly easier with demand only fair; $56@56.50, bulk, Minneapolis.

Los Angeles: Demand fair; trend steady; supply ample; $83.

New Orleans: Demand fair; supply adequate; trend stronger; 32% or better $77@79.50.

Portland: Demand steady; supply ample; trend unchanged; $64, f.o.b. Los Angeles.

Boston: Demand slow; supply adequate; $82.

Philadelphia: Demand dull; supply fair; $76.

Cincinnati: Demand fair; trend steady; supply adequate; $72.25@77.25.

MALT SPROUTS

Cincinnati: Demand fair; trend steady; supply adequate; No. 1 $49.50.

Chicago: Demand and supply fair; No. 1 $44@44.50.

St. Louis: Demand good; trend firm; supply ample; No. 1 bulk $36 ton, No. 1 sacked $42 ton, No. 2 bulk $33 ton.

New Orleans: Demand fair; trend steady to higher; supply adequate; $45@49.

MEAT SCRAPS

Ft. Worth: Demand improved; supply sufficient; meat and bone, 50% $67@76, sacked, f.o.b. or delivered Ft. Worth.

Kansas City: Market unchanged; demand fair; 50% meat and bone scraps $70@72.50, sacked, Kansas City.

Louisville: Demand slow; supply heavy; trend unsettled; $65@70 ton.

Seattle: Demand slow; trend easy; supply good; $67.50 ton, ex-warehouse, truck lots.

St. Paul: Market easier at $67 for 50% meat and bone scraps.

Buffalo: Demand just fair; trend steady; supply ample; 50% meat scraps $65 ton, bulk; $68, sacked.

Omaha: Demand slow; supply ample; $72.50.

Chicago: Demand slow; supply heavy; 50% protein $62.50@70; 55% $80.

St. Louis: Demand fair; trend firm; supply ample; 50% $70@72 ton bulk, $75@77 ton in paper sacks, $74@76 ton in burlap sacks.

Los Angeles: Demand good; trend steady; supply limited; $1.55 a unit of protein.

San Francisco: Demand fair; supply good; $1.50 a unit of protein.

Wichita: Demand good; supply about offsets demand; 50% $72.50, f.o.b. plant; 55%, no quotations, on offerings.

New Orleans: Demand good; trend steady; supply limited; $72.50@74.50.

Ogden: Demand firmer; supply normal; $77.50 ton in 100-lb. bags.

Portland: Demand slow; trend higher; supply ample; $1.40.

Boston: Demand fair; supply steady; $1.05 a protein unit; converted 50% $65.

Cincinnati: Demand slow; trend stronger; supply adequate; 50% $65@67 ton, sacked, f.o.b. Cincinnati.

New York: Demand and trend steady; supply sufficient; 50% $67.50, 55% $72.50, bulk; 50% $70, 55% $75, sacked.

MILLFEED

Minneapolis: Demand picked up, especially on bran, and prices were stronger this week. Bran $39.50@40, standard midds. $39@39.50, flour midds. $42@42.50, red dog $43.50@44.

Kansas City: Trend stronger with demand good and offerings fair; shorts have shown the greater strength and have moved out of their recent slowness; bran $37.50@38.25, shorts $38.75@39.50, sacked, Kansas City; bran $33.75@34.50, shorts $36.25@37.25 and middlings $35@36, bulk, Kansas City.

Wichita: Demand fair; supply adequate; basis Kansas City, Jan. 17: bran $37@37.50, shorts $37.75@38.25; bran advanced 75¢ ton and shorts $1.25 ton, compared with the preceding week.

Ft. Worth: Demand improved; offerings moderate; carlots, burlaps, prompt, wheat bran $44@45, gray shorts $44.50@45.50, delivered Texas common points; 50¢@$1 higher on bran, $1.50 higher on shorts compared with previous week.

Omaha: Demand slow; supply adequate; bran $38.25, shorts $39.50; standard midds., bulk $36.50.

Chicago: Feed manufacturers held their purchases of millfeeds to a minimum during the week ending Jan. 18. Traders said prospective buyers did not seem to have any confidence in the market. Quotations Jan. 18: bran $42, standard midds. $41, flour midds. $46@47, red dog $46@47.

Cincinnati: Demand fair; trend steady; supply adequate; bran $45@47.50, middlings $45.50@46.50.

Louisville: Demand good; trend stronger; supply ample; bran $47.30; mixed feed $48.10; shorts (gray) $47.95; standard midds. $48.90.

St. Louis: Demand fair; trend steady; supplies ample; bran $41.50@42, shorts $41.75@42.25, St. Louis switching limits.

Buffalo: Reduced flour mill running time strengthened millfeed prices a little this week. Demand remained quiet from mixers and the country trade. Bran advanced 50¢, middlings were up $1 and heavy feeds gained 50¢. Quotations Jan. 18: bran $45@45.75, standard midds. $43@45, flour midds. $48@48.50, red dog $48@48.50.

New York: Bran $51@51.50, standard midds. $51.50@52.

Boston: Demand spotty; supply adequate; bran and middlings $52@52.50.

Philadelphia: Demand spotty; supply ample; bran $51.50, standard midds. $51, red dog $54.

New Orleans: Demand slow; trend stronger; supply adequate; bran $47@47.50, shorts $47@48.25.

Memphis: Demand poor; trend higher; supply ample; wheat bran $43.25, gray shorts $44, standard midds. $42.50.

Seattle: Demand improved; trend firm; supply good; $43 ton, delivered common transit points, carlots.

Portland: Demand good; trend higher; supply limited; $42.

Ogden: Supply normal; to Utah and Idaho: red bran and mill run $41, middlings $46; to Denver: red bran and mill run $48, middlings $53; to California: red bran and mill run $48.50, middlings $53.50, f.o.b. San Francisco and Los Angeles.

Los Angeles: Demand fair; trend steady;

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TERMINAL ELEVATORS:
Kansas City, St. Louis, Chicago, Buffalo, Omaha, Toledo, Columbus, Fort Worth, Portland, Galveston, Enid, Minneapolis, Norfolk, Nashville, Louisville, Memphis, Houston

supply ample; mill run, Utah-Idaho billing, sacked $49.50@50; red bran, delivered CCP, sacked $54@54.50.

San Francisco: Demand fair; supply ample; $49.50; red bran $53.50.

MILLET

St. Louis: Demand fair; trend firm; supply ample; recleaned Early Fortune $3.50 cwt., sacked; recleaned White Proso $3.75 cwt., sacked.

MINERAL FEED

Ft. Worth: Demand fair; supply ample; all-purpose granules $82, block $92; mineral phosphorus 6%, granules $95, block $105; cattle-sheep mineral, 7% phosphorus, granules $83, block $101; hog mineral phosphorus 3½%, granules $82; phosphorus 2% $69 (all in 50-lb. paper bags).

Sioux City: 50-lb. mineral blocks, 8.2% phosphorus $92; 7.5% phenothiazine sheep mineral blocks $4 each.

San Francisco: Demand steady; supply good; all-purpose with iodine $70.

Wichita: Demand good; supply about offsets demand; all-purpose with iodine, 50-lb. blocks $92.50, 100-lb. bags $87.50, f.o.b. plant.

Seattle: Demand steady; supply ample; trend unchanged; $65 ton for high phosphorus mixtures; $44 ton for competitive brands.

Portland: Demand slow; supply ample; trend unchanged; $42.

Ogden: Demand good; supply normal; $105 ton, 50-lb. blocks; $95 ton, granular, 50-lb. bags.

MOLASSES

New York: Trend steady; blackstrap 12⅛¢ gal., tank cars, tank wagons, f.o.b. **Boston:** Demand steady; supply adequate; 15¢ gal. in tank cars.

Cincinnati: Demand fair; trend stronger; supply adequate; 11½@12¢ gal., New Orleans.

Los Angeles: Demand good; trend steady; supply ample; $24, f.o.b. tank cars; $24.25, f.o.b. tank trucks, both Los Angeles harbor.

San Francisco: Demand and supply good; $24 ton, f.o.b. cars, Richmond, Cal.

Seattle: Demand and supply good; trend firm; $25 ton, f.o.b. Seattle, tank car lots.

Beaumont: Trend steady; blackstrap 11¢ gal., in tank cars and tank wagons, f.o.b. Beaumont.

Portland: Demand good; supply ample; trend unchanged; $25.

Ft. Worth: Demand good; supply ample; blackstrap 14¢ gal., f.o.b. Houston, carlots, delivered Ft. Worth, cars and/or truck $30.94 seller's market price on date of shipment, maximum 15¢ January-February shipment.

Memphis: Demand poor; trend higher; supply adequate; blackstrap 11⅛¢ gal., tank car, f.o.b. New Orleans.

Louisville: Demand fair; trend steady; supply normal; 11½@11⅝¢ gal., tank car lots, f.o.b. Gulf ports.

Kansas City: Market has strengthened with the word that Cuban new crop molasses has been sold at 10¢ gal., Cuba; delay of the freight rate reduction until Jan. 26 also is a factor in the stronger trend and low-price quotations have disappeared from the market which is now mostly 11⅝@12¢ gal., New Orleans.

Minneapolis: Prices were stronger this week, with prices quoted at 12@13¢ gal., New Orleans; California $25 ton and Portland-Seattle $26.

New Orleans: Demand good; supply ample; trend stronger; 11½@12¢ gal. in tank cars, f.o.b. New Orleans.

Buffalo: Demand and supply good; trend higher; 15½¢ gal., f.o.b. Albany.

Atlanta: Citrus molasses—demand good; supply limited; trend steady; $19 ton, bulk, f.o.b. Florida producing points.

NIACIN

New York: Trend firm; $8 kilo, 50-kilo lots; $8.10 kilo, 10-kilo lots; $8.20 kilo, 5-kilo lots; $8.30 kilo, 1-kilo lots; freight prepaid or paid to destination.

OAT PRODUCTS

Seattle: Demand and trend steady; supply good; feed oats $64 ton, ground oats $64 ton, rolled oats $68 ton, all ex-warehouse, l.c.l.

Minneapolis: Demand fair; quotations steady to easier; feeding rolled oats $79@80, standard pulverized $42@43, feeding oatmeal $66.50@67, reground oat feed $15@20, crimped oats $55.

Ft. Worth: Demand fair; supply adequate; oat millfeed $44.80, reground oat millfeed $25.30, delivered Ft. Worth.

Philadelphia: Demand dull; supplies light to fair; pulverized white oats $50; Canadian oat feed $34.50, domestic $24.50.

Memphis: Demand poor; trend lower; supply ample; 3½% protein, reground oat feed $21.30.

Cincinnati: Demand fair; trend steady; supply adequate; reground oats $20@21; pulverized white oats $47; rolled oats $36.

Boston: Demand steady; supply irregular; Canadian white pulverized $48.50; Canadian ground mixed $48; reground oat feed $21, nominal.

Portland: Demand good; trend higher; supply limited; rolled $65, ground $62, cleaned $65.

New Orleans: Demand fair; trend stronger; supply ample; pulverized white oats $50.50@57; oats $48@50.50; mixed feed oats $43@45.50.

Los Angeles: Demand and trend steady; supply ample; white pulverized $64.

Louisville: Demand fair; trend easy; supply normal; reground $21.40; rolled oats $42.40; feeding oatmeal $76.40; pulverized white oats $47.40; crimped white oats $64.90.

St. Louis: Demand fair; trend steady; supply ample; reground oat feed $17.50 in 100-lb. burlap sacks; pulverized white oats $45 ton, choice $46.

Chicago: Demand improved; supply adequate; reground oat feed $15.50; fine ground feeding oatmeal $68@70; feeding rolled oats $80@82.

OYSTER SHELL

San Francisco: Demand fair; supply ample; local $15, eastern $26.

Seattle: Demand steady; supply good; trend unchanged; eastern $35 ton, western $28 ton, ex-warehouse, l.c.l.

Los Angeles: Demand and trend steady; supply ample; local $18.25, eastern $26.

Boston: Demand and supply steady; in paper $22.34.

Louisville: Demand and trend steady; supply good; $20.39.

Portland: Demand slow; supply ample; trend unchanged; western $29, eastern $35; granite and crystal grits $25.

PEAT MOSS

Chicago: Demand good; supply ample; $3.65@3.75 standard 7½ cu. ft. bale.

Portland: Demand slow; supply ample; trend unchanged; $3.25.

Los Angeles: Demand fair; trend steady; supply ample; Canadian $3.40 in 300-bale lots, delivered California main line points; German or Holland $3.45.

San Francisco: Demand fair; supply ample; $3.55 bale.

Boston: Demand steady; supply adequate; carlots $2.90@3 bale.

Philadelphia: Demand good; supply fair; $2.90, f.o.b. pier.

POTASSIUM IODIDE, U.S.P.

New York: Trend steady; U.S.P. granulated and powder, free-flowing powder $1.90 lb. in 200-lb. lots, $1.92 lb. in 100-lb. lots, $1.95 lb. in 25-lb. lots; 90% KI in calcium stearate, calcium carbonate or magnesium carbonate mixtures, $1.81 lb. in 200- and 250-lb. lots, $1.83 lb. in 100-lb. lots, $1.86 lb. in 25-lb. lots, f.o.b. New Jersey; freight prepaid except on 25-lb. lots.

St. Louis: Demand fair; trend firm; supply ample; 100% pure potassium iodide, U.S.P., 250-lb. average in drums $1.90, 100-lb. lots in fiber drums $1.93; potassium iodide calcium stearate mixture, 225 lb. in leverpak drums $1.81, 100-lb. lots in fiber drums $1.85.

RIBOFLAVIN

New York: Trend firm; feed grade (in feed supplements): 6¢ gram in 3.63 to 16 gm./lb. mixtures, freight prepaid or paid to destination.

RICE BY-PRODUCTS

Atlanta: Demand good; trend strong; supply limited; bran $52, sacked, immediate.

Memphis: Demand poor; trend steady; none available; bran $42 (nominal), sacked, f.o.b. Arkansas points.

Ft. Worth: Demand fair; supply scarce; carlots, rice bran $39@40, prompt shipment, f.o.b. south Texas rice mills; hulls $3@4, f.o.b. mills.

Los Angeles: Demand fair; trend steady; supply ample; bran $54.31.

San Francisco: Demand good; supply fair; bran $55, polish $62.

SCREENINGS

Cincinnati: Demand fair; trend steady; supply adequate; Canadian $28; barley $18@21.

Buffalo: Demand fair; trend steady; supply adequate; ground, sacked $29.50, New York; unground, bulk $21.75, New York.

Chicago: Demand improved; supply plentiful; ground grain screenings $30.25; Canadian, bulk $32.25.

Minneapolis: Demand rather light; prices about unchanged; country run $18@22, lights $5@14, mediums $14@23, heavies $22@30; Canadian $15 bulk, Duluth; Canadian ground $25 sacked, Duluth; flax screenings $20.

SOFT PHOSPHATE WITH COLLOIDAL CLAY

Chicago: $22@22.75.
Kansas City: $22.15@22.80.
St. Louis: $21.40@22.
Des Moines: $22.50.
Philadelphia: $21.55@22.15.
Minneapolis: $23.15@23.85.
Buffalo: $22.50@23.10.
Atlanta: $18@18.70.
Memphis: $19.40@19.95.

SORGHUMS

Ft. Worth: Demand slow; supply sufficient; carlots, bulk, No. 2 yellow $2.16@2.21, delivered Texas common points.

Cincinnati: Demand fair; trend steady; supply adequate; $2.65.

Los Angeles: Demand moderate; trend steady; supply ample; No. 2 milo, delivered CCP, prompt $2.70.

SOYBEAN OIL MEAL

Ft. Worth: Demand slack; supply sufficient; carlots 44% $70.50@73 depending on origin; truck lots $65@65.50, prompt, delivered Ft. Worth.

Seattle: Demand fair; trend easy; supply good; $78.50 ton, delivered, carlots, sacked, January-February.

Memphis: Demand fair; trend steady; supply ample; prime 44% solvent $68, sacked, f.o.b. Arkansas points.

Philadelphia: Demand spotty; supply ample; $50, bulk, Decatur.

Ogden: Supply normal; $85@90.

Portland: Demand slow; trend lower; supply ample; January $46; October-November $50.

Boston: Demand spotty; supply adequate; $51, f.o.b. Decatur.

Cincinnati: Demand fair; trend steady; supply adequate; $51@52, bulk, Decatur.

San Francisco: Demand fair; supply ample; $76.57.

Wichita: Demand slow; supply sufficient; 44% $65, f.o.b. Wichita.

Los Angeles: Demand fair; trend steady; supply ample; $77.07@78.07, delivered CCP.

Louisville: Demand fair; trend stronger; supply ample; $63.50.

Kansas City: No change in the rather easy position soybean oil meal has been in for several weeks; demand fair; trend steady; $48.50@49 bulk, Decatur, for Kansas City and West; $51@51.50 bulk, Decatur, unrestricted.

Atlanta: Demand slow; trend steady; supply ample; 44% $68.50, sacked, immediate.

Minneapolis: Demand was said to be a little better; prices were up a shade from a week earlier; $45@46, bulk, Decatur.

Chicago: Soybean oil meal was traded at a slow pace during the week ending Jan. 18. Some processors have cut back on their crushing operations to relieve the supply situation, and buyers continue to keep their inventories at a fairly low level. Quotations Jan. 18: 44% protein soybean oil meal, unrestricted $61.50@62.50.

Decatur: Demand fair; supply adequate; 44% bulk, unrestricted $51.50.

Omaha: Demand fair; supply adequate; 44% solvent $63; 41% expeller $65, pellets $67.50.

SUNFLOWER SEED

St. Louis: Demand fair; trend steady; supply ample; large black $17.50 cwt.; large gray $17 cwt.; medium black $15 cwt.; medium gray $14.50 cwt.; small black and gray $10 cwt.

TANKAGE

St. Louis: Demand fair; trend firm; supply ample; 60% $72.50@74.50 ton bulk, $77.50@79.50 ton in paper sacks, $76.50@78.50 ton in burlap sacks.

Chicago: Demand slow; supply heavy; 60% protein $67.50@75.

Kansas City: Trend unchanged; 60% digester $70@72.50, sacked, Kansas City.

Wichita: Demand good; supply adequate; 60% $72.50, f.o.b. plant.

Louisville: Demand dull; trend unsettled; supply heavy; $70@75 ton.

Los Angeles: Demand fair; trend steady; supply ample; $1.35 a unit of protein.

Cincinnati: Demand fair; trend steady; supply adequate; 60% digester $71@74.50.

Ft. Worth: Demand fair; supply moderate; 60% digester $77.50@80, f.o.b. Ft. Worth.

Omaha: Demand slow; supply ample; $72.50.

St. Paul: Demand off and price lower; 60% digester $63.

WHEAT GERM MEAL

Chicago: Market stronger at $66.

Buffalo: Demand good; trend downward; supply scarce; commercial grade $58.60, sacked, f.o.b. Buffalo.

Russ Jones

Feed & Grain Club Names Russ Jones

CEDAR RAPIDS, IOWA — Russ Jones, Russ Jones & Co., has been installed as president of the Cedar Rapids Feed & Grain Club. Other new officers include Tudor Wilder, Wilder Grain Co., vice president; Guy James, National Oats Co., secretary, and Fred Jones, Cedar Rapids Chamber of Commerce Grain Service, Inc., treasurer.

Directors include Clarence Bohlander, Cargill, Inc.; Fred Hollands, Penick & Ford, Ltd., Inc.; Marvin Zinn, Piper Grain & Milling Co.; George Coontz, Wilson & Co., Inc., and Les Liabo, Iowa Milling Co.

Speaker at the recent meeting of the Cedar Rapids group was Norman Dewes, General Mills, Inc., Minneapolis, on the subject, "Merchandising People."

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CATTLE ON FEED

(Continued from page 1)

braska and Kansas) for which state inspection records are available, were less than 1% below the same period a year ago. For the July-September period, inshipments were 2% smaller than for the corresponding period a year earlier.

Increases in Other Areas

Outside the North Central states, the number of cattle on feed was 3% larger than a year ago, USDA reports. California, the leading state in the West, showed an increase of 5%, while Colorado, the second leading western state, was 18% below a year earlier. In Montana, Idaho, New Mexico, Arizona, Utah and Oregon, the number of cattle on feed was greater than a year ago, while other areas of the West were down. Pennsylvania was down 2%, while Texas was up 8%.

For the 13 states in which quarterly estimates of cattle on feed are made, the number on feed Jan. 1, 1956, was down 1% from a year earlier. These 13 states are Ohio, Indiana, Illinois, Minnesota, Iowa, Missouri, South Dakota, Nebraska, Kansas, Texas, Colorado, Arizona and California. On Oct. 1, 1955, the number was 19% larger than a year earlier. The lower level of feeding on Jan. 1 relative to Oct. 1, USDA said, resulted from heavy marketings of fed cattle and fewer replacements during the past quarter as compared with the corresponding period in 1954.

In 11 states (the same as the 13 except Texas and Arizona) where quarterly estimates for both October and January are available, marketings during the period October-December, 1955, were 15% larger than the same period in 1954. Placements during the same period were down 10%.

Length of Time on Feed

Data for the 14 states of Ohio, Indiana, Illinois, Minnesota, Iowa, Missouri, South Dakota, Nebraska, Kansas, Texas, Idaho, Colorado, Arizona and California, reveal that the number on feed over three months is 30% above last year, but those on feed less than three months decreased 9%, the USDA report shows.

As a per cent of the total on feed, the number on feed less than three months was 72% compared with 79% a year earlier. Cattle on feed three-six months were 24% of the total, compared with 19% a year earlier. About 4% of the total had been on feed more than six months, compared with 2% a year ago.

Jan. 1 estimates by weight groups and kinds of cattle on feed this year indicate less interest in feeding calves and light-weight cattle than last year, USDA said. Cattle weighing under 600 lb. comprised 29% of the total number on feed, compared with 33% a year earlier. Those weighing 600-900 lb. were 44% of the total compared with 45% the year before. And those weighing over 900 lb. were 27% compared with 22% a year earlier.

Steers represented 57% of the Jan. 1 total compared with 53% last year; heifers 21% and 19%; calves 21% and 26%, and cows and other cattle 1% and 2%.

Cattle feeders in these 14 states intend to market fed catle at a faster rate than they indicated a year ago, the USDA report shows, with 51% of the Jan. 1 number to be marketed by April 1.

CATTLE AND CALVES ON FEED JAN. 1, 1950-56*

State	5-year average (1950-54)	1955	1956	1956 as % of 1955
	1,000 head			%
Pennsylvania	89	84	82	98
Ohio	137	164	180	110
Indiana	205	272	321	118
Illinois	532	609	639	105
Michigan	100	114	131	115
Wisconsin	96	108	112	104
E. N. C.	1,070	1,267	1,383	109
Minnesota	306	321	337	105
Iowa	1,064	1,225	1,225	100
Missouri	231	234	281	120
No. Dak.	66	76	110	145
So. Dak.	196	214	210	98
Nebraska	546	625	450	72
Kansas	251	227	182	80
W. N. C.	2,660	2,922	2,795	96
N. C.	3,730	4,189	4,178	100
Oklahoma	62	68	61	90
Texas	109	132	143	108
Montana	36	45	58	129
Idaho	93	135	150	111
Wyoming	25	30	25	84
Colorado	255	275	225	82
N. Mexico	22	29	37	128
Arizona	93	169	204	121
Utah	48	57	59	104
Nevada	32	30	29	97
Washington	37	40	38	95
Oregon	29	36	45	124
California	301	467	489	105
Western	1,182	1,513	1,563	103
U. S.	5,001	5,786	5,823	101

*Estimates include only cattle being fattened for market as a more or less distinct agricultural enterprise, and excludes small operations incidental to dairy and general farming. Cattle thus fed are presumed to produce carcasses that will grade good or better.

In addition there have been a number of cattle finished on distillery slop, mostly in Kentucky, and on by-product feeds in other states not shown as well as large numbers being winter fed in West Virginia, Virginia, Kentucky and some other states to be marketed as grass fat in late summer.

T. H. Hamlin, Jr.

Superior Separator Co. Appointments Made

HOPKINS, MINN.—The appointment of T. H. Hamlin, Jr., to the position of regional sales supervisor of bulk handling operations was announced recently by I. S. Willis, general manager of the process machinery division of the Superior Separator Co., Hopkins. Mr. Hamlin will represent the company in the western states and make his headquarters at Los Angeles.

Marshall Carpenter, sales manager of bulk handling equipment, and William Symons, sales supervisor for the eastern states have been transferred to the company's headquarters at Hopkins. Mr. Carpenter will direct all company sales of bulk handling equipment and Mr. Symons will represent the company in the eastern half of the U.S.

Mr. Hamlin is a native of California. He attended Menlo Junior College and Claremont Men's College, where he majored in economics. After three years in the submarine service of the Navy, he joined the Pike Trailer Co., manufacturer of commercial truck trailers. Prior to going with Superior, he was self-employed in industrial real estate management and development.

Superior Separator bulk handling equipment includes bulk tank trucks for the feed industry and a new line of solids pumps marketed under the trademark "Fluidizer," which are distributed to the flour milling and other trades.

FEED MAN RETIRES

IRONTON, OHIO—O. L. Harper, owner and operator of the O. L. Harper Flour & Feed Co., Ironton, Ohio, has retired after more than 40 years in the milling business.

Iowa Short Course Planned for Assistants

AMES, IOWA—A short course for assistant managers of feed and elevator businesses will be conducted Feb. 27-March 2 at Iowa State College, Ames. The class will be limited to 50 men.

Additional information about the course may be obtained by writing T. Harris Young, Young Feed Co., Marshalltown, Iowa; Richard Phillips, Department of Economics and Sociology, Iowa State College, or Ken Lowery, Farmers Grain Dealers Assn., Des Moines.

MIDWEST BOARD MEMBERS

KANSAS CITY—Three new members were added to the board of directors of the Midwest Feed Manufacturers Assn. as a result of a mailed ballot completed this week. Those elected were Alfred Owens, Simpson & Co., Colorado Springs, Colo.; Joe Melbergen, W. B. Johnston Grain Co., Enid, Okla., and Robert Sargent, Sargent Mills, Inc., Des Moines. Official tellers for the election were F. G. Bienhoff, Bartlett & Co., Kansas City, and Max Shields, Albers Milling Co., Kansas City.

NORTHWEST FEED MEETING

(Continued from page 3)

will tend to blame the biggest item of expense, that is, feed, if there is trouble in his herd or flock. However, feed is seldom the cause, Mr. Dewes said, but a feed analysis should be made to make sure.

Most often the trouble lies in mismanagement, disease or a weather condition. Mr. Dewes cited the case of a dairyman who lets his cows out of the barn in spring to lessen his cleaning work and exercise the animals. If it happens that some cows will drink puddle water made impure by feces, the result may be scours.

Roughage Underfeeding Common

In spite of good pastures and hay in Minnesota and Wisconsin farmers often underfeed roughage, mainly because they do not realize that hay appears large in volume but weighs comparatively little. Mr. Dewes says an interesting experiment is to ask a dairyman to estimate the weight of a pile of hay. Invariably he will underestimate it. Poultrymen often do not readily recall the incident which might suddenly cause a drop in egg production. He recalled the case of a feeder whose flock suddenly produced eggs with blood spots. Upon investigation, the farmer recalled shooting off a shotgun in back of the hen house three weeks previously, upsetting the chickens.

Leo Becker, McCabe Co., Minneapolis, urged feed men to "go out on the firing line" when a customer has trouble. If it's a disease problem, then expert guidance is needed. Ask the farmer if he is using absolutely the same feeding and management practices as he did before trouble developed, Mr. Becker advised. Often the farmer will have trouble recalling the change but invariably one will be discovered. Make a complete list of every procedure the farmer is using. Study the list to determine where the trouble may be arising.

The dealer who has difficulty solving a feeder's problem will always have the ready assistance of suppliers at hand, Mr. Becker concluded.

The final panelist on the feeder production problems was Jerry Welna, Dr. Salsbury's Laboratories, Charles City, Iowa, who discussed poultry diseases. If a poultryman's flock doesn't lay, the blame is usually put on feed or the chicks. Very often disease is to blame, he said.

Disease is often difficult to detect, Mr. Welna said, especially in flocks which look healthy but which are actually infected. Some diseases are not dramatic, such as one type of coccidiosis which doesn't show up in the hen's appearance for several weeks but actually destroys the gut. Worms work in a flock which looks healthy but doesn't lay. Virus diseases, too, knock down egg production but are more easily detected.

Mr. Serkland, in summarizing the panel discussion, said he had a poultryman customer who gave him a large volume of business until his egg production suddenly dropped. No change in feed or management was made but a chance remark by the farmer revealed that he'd been keeping a wild cat in the hen laying house until a neighbor was able to pick it up. Mr. Serkland also said egg production drops in customers' flocks have been traced to sparrows in the laying house, corn cob litter which was producing mold, straw and corn lofts which had turned moldy, and lack of protein in the diet.

Make an attempt to become genuinely interested in your customers and employees, urged LuVain Bue, head of Dale Carnegie training in Minnesota, in a talk on Jan. 16. In his discussion of public relations, Mr. Bue said this is merely a matter of making friends.

Employees and customers will show more interest in their associations with you and your products if you smile and put enthusiasm into your relations with them. "Act enthusiastic and you'll be enthusiastic," Mr. Bue stated. Employees will do a better job for you if you'll take the trouble to improve your human relations. "Improved human relations mean improved sales," he stated.

Seek 3% Net Profit

Mr. Burrell outlined what he considered a profitable goal for a feed store. The feed dealer should strive for a 15% gross profit on his investment and a net profit on sales of 3%. He should turn over his stock five times a year. Get rid of old accounts and have them cleaned out. Eliminate duplicate lines. Watch your

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Chicks Placed in Principal Broiler Areas

(000's omitted)

Week ending	Maine	Conn.	Penna.	Ind.	Ill.	Mo.	Del.	Md.
Nov. 12	719	465	617	756	135	457	1,336	1,156
Nov. 19	724	626	699	808	205	494	1,250	1,152
Nov. 26	731	484	594	787	170	543	1,468	1,091
Dec. 3	650	593	542	733	180	571	1,194	1,312
Dec. 10	811	542	656	712	157	604	1,371	1,056
Dec. 17	726	441	607	692	157	586	1,495	1,151
Dec. 24	728	467	597	698	127	563	1,614	1,074
Dec. 31	756	587	572	740	130	519	1,607	1,143
Jan. 7	774	489	580	634	172	493	1,538	1,280
Jan. 14	764	557	617	763	162	471	1,570	1,327

Week ending	Va.	W. Va.	No. Car.	So. Car.	Ga.	Fla.	Ala.	Miss.
Nov. 12	1,066	429	1,231	207	3,402	171	1,188	786
Nov. 19	1,092	400	1,347	192	3,223	206	1,320	756
Nov. 26	988	403	1,282	218	3,396	166	1,349	966
Dec. 3	1,087	423	1,464	226	3,462	210	1,336	872
Dec. 10	1,157	437	1,368	229	3,617	231	1,372	928
Dec. 17	1,110	475	1,414	214	3,543	243	1,365	923
Dec. 24	1,093	508	1,408	243	3,761	213	1,446	906
Dec. 31	1,197	466	1,366	216	3,693	181	1,319	885
Jan. 7	1,220	507	1,397	190	3,997	212	1,479	897
Jan. 14	1,253	446	1,438	193	3,995	254	1,328	886

Week ending	Ark.	La.	Texas	Wash.	Oregon	Calif.	Total 22 areas 1955-56	Total 22 areas 1954-55
Nov. 12	1,582	276	1,715	194	101	886	18,875	15,043
Nov. 19	1,760	295	1,764	183	113	914	19,474	15,883
Nov. 26	1,707	310	1,748	164	93	879	19,431	15,471
Dec. 3	1,859	292	1,748	174	150	1,003	20,080	15,849
Dec. 10	1,797	286	1,803	128	132	986	20,269	14,533
Dec. 17	1,824	292	1,797	223	131	999	20,448	14,801
Dec. 24	1,807	276	1,624	199	141	1,014	20,489	11,331
Dec. 31	1,730	240	1,708	203	140	1,018	20,416	14,346
Jan. 7	1,699	270	1,743	217	161	1,057	21,056	15,025
Jan. 14	1,674	262	1,727	220	184	1,087	21,187	14,397

stock. If an item doesn't move, close it out, he said.

Carry a complete line of farm supply products related to feeds. There are nine commercial classes of feed and all should be handled, Mr. Burrell suggested. Related items may include dairy, poultry and hog supplies, fencing, fertilizer, hardware, sanitation supplies and health products.

Good merchandising begins with the exterior of your store, Mr. Burrell asserted. It has been said that 50% of a retail store's sales can be made through the display windows.

Know your banker and inform him of the dollar and cents story of your business and the importance of the feed industry in your area, advised Mr. Burrell. Improve your services to feeders. Keep ahead of the farmer customer because the latter has greatly enhanced his knowledge of livestock, farming and nutrition. Your customer is not too concerned about the feed dealer making money but he is interested in whether he is making a profit himself, said Mr. Burrell.

A talk on pending labor legislation, the minimum wage law, agricultural legislation and trading stamps was given by Thomas H. Hodgson, secretary, Minnesota Retail Federation, Inc., Minneapolis, on the afternoon of Jan. 16. Final afternoon activity was a tour of the King Midas Feed Mills in Minneapolis.

The annual banquet was served on the evening of Jan. 16, followed by the traditional floor show.

NUTRITION—College nutritionists took over the final session of the convention the morning of Jan. 17.

With Dr. Elton Johnson head of the University of Minnesota's poultry department, as moderator, Dr. Lester Hanson, Minnesota swine specialist, Dr. W. E. Petersen, dairy specialist at Minnesota, and Dr. Stanley L. Balloun, Iowa State College poultry specialist, presented information on recent developments in animal and poultry nutrition.

Dr. Balloun presented some data on Iowa State studies of use of fat in poultry rations and of protein levels in turkey poult rations. Dr. Hanson reviewed recent findings in how to control parakeratosis. Dr. Petersen reported on the effects of feeding high energy feeds to calves and heifers, on efforts to increase milk production and on nutritional disease problems. Dr. Johnson briefly reviewed Minnesota work on levels of protein in poult rations.

"There isn't very much new in swine nutrition," said Dr. Hanson. "And I consider as the most significant development during the year the controlling of parakeratosis."

He told how it was found that feeding a high calcium diet without zinc resulted in the rapid development of parakeratosis. And when zinc is added, the disease is controlled.

Dr. Hanson said that at the university they are now feeding swine a ration containing about 5 mg. zinc per pound of feed and they are having no trouble.

No Parakeratosis Now

"This is the first winter in five at Minnesota," he stated, "that we have not had parakeratosis unless we wanted it."

He did take issue with others, however, on a statement that if a ration contains no more calcium than recommended by the National Research Council, parakeratosis will not occur.

"We have been within that level and we have still had trouble," Dr. Hanson stated.

Commenting on a question about anemia in baby pigs, Dr. Hanson said there is no excuse for anemia due to an iron deficiency. He advised the udder swabbing technique and recommended that feed dealers tell their customers to do it once a day to be sure an adequate job is done even if the farmer should forget once in a while.

"We are still experimenting with early weaning," he said, "but we still have not found any way to produce cheaper gains."

He also told the feed dealers that some "remarkable results" have been obtained in Minnesota experiments by giving soluble antibiotics to swine, but said that not enough data is available yet to draw conclusions.

"The biggest problem of the hog raiser is quality," Dr. Hanson said in answer to a question about whether swine rations would be improved by the addition of fat.

"I am not enthusiastic about feeding fat to hogs to speed up their growth because it probably would increase the back fat. And we all know there is too much of that now," he stated.

Poultry Diets

Dr. Balloun reported on some recent experiments with feeding animal fat in chick diets. In one test in which solvent meat scrap and tallow were fed, there was an improvement in gain with each percent increase in the amount of tallow, up to 3%.

Adding fat to a regular ration, he said, produced an increase in growth and lowered feed requirements per pound of gain.

Dr. Balloun reviewed briefly some Iowa State work with protein levels in turkey rations. "It is my contention that poults are fed more protein than is economical."

He said that from 17-24 weeks, the protein requirements for optimum growth are lower than for maximum growth. Finishing turkeys on a 12% protein diet produced just as good gains at less cost, he stated.

He also pointed out that studies have shown that adding lysine to the protein in the rations results in optimum growth at a lower protein level.

Making a point for better controlled rations, Dr. Balloun showed how efficiency is cut when feeders dilute a concentrate more than it was designed for.

"Manufacturers put in three times as much vitamin fortification as is needed because they are forced to protect themselves against the customer who dilutes the concentrate too much and then complains about the results. It costs the wrong man," he stated.

Future Developments

In the future, Dr. Balloun predicted the following poultry developments:

- Increased corn (percentage of carbohydrate) in the ration.
- Some reduction in feed per pound of gain and per dozen eggs.
- Better balanced rations.
- Less use of pasture range.
- More confined broilers.
- More cage laying.
- Virtual disappearance of the farm chicken.

In answer to a question on what calorie-protein ratio should be fed, Dr. Balloun said he didn't think that the best ratio has been established.

"As calories are increased there is a need to increase protein and probably certain vitamins. But there is still much contradictory evidence," he said.

Turkey Rations

More information on turkey rations was presented by Dr. Johnson.

"We should be more conscientious about feeding programs so that more economical production is achieved," he said. "This year we have bettered the old Minnesota standard of turkey feeding efficiency by feeding a restricted high protein supplement."

Dr. Johnson reviewed university experiments where with the 34% protein restricted ration a 27% increase in profit was achieved.

Five lots of birds were fed. Lot 1 was fed all they wanted of the Minnesota standard 25% protein ration. Lots 2 and 3 got a 28% protein ration and were fed all they wanted. Lot 4 got a 34% protein ration and were fed all they wanted. Lot 5 got the 34% protein ration with mash restricted to 15 lb. per 100 birds per day, but full-fed corn and oats.

The restricted ration produced turkeys at a feed cost of $2.19 per bird, lowest of the five groups, and gave up to 24¢ more profit per bird over feed cost than the four other lots. The restricted group also had a lower feed requirement per pound of gain—taking 3.25 lb. feed to gain 1 lb., in comparison with 3.49 lb. feed needed for birds on the other rations, Dr. Johnson said.

Dairy Animals

Speaking about rations for calves and heifers, Dr. Petersen said that feeding heavily with a high energy ration in the early months of a calf's life reduces later milk production by as much as 60%. The best production level is achieved when a calf is fed with a low energy level, he stated. He said researchers have found that at each increment of increased energy in a calf ration, the later milk production is reduced.

"The rate of gain during the first six months of a calf's life seems to be relatively unimportant," Dr. Petersen said. "Apparently the most important object in feeding a calf is to get it to survive. We don't know why," he stated.

In increasing the milk production of cows, Dr. Petersen said the object is to increase the number of cells in the udder.

He cited three methods of accomplishing this goal that have been tried: use of thyroid, use of growth hormones and use of an estrogen like stilbestrol. The thyroid and growth hormones increase production but not efficiency, he said. Experiments with feeding estrogen at the 10 mg. per day level, the same as for beef cattle, have indicated that the feed efficiency is increased, he said. He explained that more work has to be done.

Dr. Petersen said that milk fever apparently can be controlled by keeping calcium down and phosphorus up in the ration during a cow's dry period. He said that feeding massive doses of vitamin D late in a cow's pregnancy has to be continuous right up until a cow calves to be effective, offering somewhat of an obstacle to the effectiveness of this method since many farmers do not know exactly when their cows are supposed to calf.

Turning to another nutritional problem, bloat, Dr. Petersen explained that there are two types—one in which a cow's ability to get rid of gas is somehow blocked, and the other in which a frothy green mass is manufactured inside the cow's stomach.

Putting down a tube will relieve the gas-type of bloat, he explained, but the frothy type, found commonly in New Zealand, is a different problem. However, he pointed out, the use of an emulsified peanut oil sprayed on grass has been effective in controlling the frothy bloat.

Antibody Production

Turning to the significant work with production of disease antibodies in a cow's udder that he and other University of Minnesota scientists reported last fall, Dr. Petersen revewed some of the known facts and projected what might be possible in this field.

"The cow's udder is the greatest factory for antibody production known," he stated. By injecting human disease organisms into the cow's udder, vast quantities of antibodies can be produced in a matter of hours whereas a human requires a week or two to do the same. These antibodies fight human diseases, he explained.

It is conceivable, Dr. Petersen said, that people drinking enough milk containing the antibodies against specific diseases will achieve an immunity to those diseases.

He emphasized, however, that this theory must be demonstrated for each human disease, and stated that it will "never be a cure-all."

MARKETS

(Continued from page 2)

operations continue good. Current supplies of broilers are on the heavy side, which is not helping the producer price-wise.

The feed manufacturer continues his cautious buying policy. Nearby needs only are taken, as a general rule, with interest in deferred positions still lacking. Some ingredients have tightened up to some extent for nearby delivery.

Cottonseed meal is considerably harder to get delivered than has been the case for several months. It is expected that the cold wave in Florida will probably cause citrus pulp to strengthen in the near future. Some sellers have already advanced prices from extreme lows—and report better demand. Rice bran is extremely tight for nearby shipment, but this condition is expected to improve with increased running time by rice millers beginning in February.

Northeast

Formula feed sales were not too robust this week. The trade can't point to any definite reason for the lag but demand hasn't picked up as much as had been anticipated. The hesitancy in the market may stem from uncertainty regarding farm legislation in Washington and its potential influence on prices.

Egg mashes were the leader in sales, followed by broiler feeds. Dairy feed sales have been picking up, especially feeds to mix with grains on the farm.

Egg prices were down and broilers were low, but placements are going along at a good clip. Current broiler prices don't give much more profit leaway for growers after their costs are deducted. But they may be figuring on volume output.

The ingredient market was irregu-

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lar. Corn held fairly steady. Oats were down 1 to 2¢. Barley held steady and feed wheat was practically unchanged. Alfalfa meal, gluten meal and gluten feed were unchanged. Hominy feed was on the weak side. Soybean oil meal was steady but it had a slightly weaker undertone. Cottonseed oil meal advanced $1 to $2. Linseed oil meal marked time. Distillers' grains were strong, scarce and up $2. Brewers' grains were hard to find but prices were unchanged. Meat scraps and tankage were unchanged. Fish meal dropped $5.

Mill running time of formula feed manufacturers varied. The overall average was put at 40 hours, with some above and some below that mark.

Millfeed prices strengthened a little on reduced flour extraction. Sales were still slow.

Pacific Northwest

The formula feed trade in the Pacific Northwest was quiet this week so far as standard types of branded feeds were concerned, but those mills which are set up to do custom work and to formulate roughage-type and grain blends report an excellent business. In spite of recent advances in the price of molasses, molasses feeds are being used at record rates, and feed men state that the scarcity of hay and other roughages is greatly expanding the consumption of feeds which run heavy to grain.

Prices at Seattle for U.S. No. 2 green hay ranged from $47@50 per ton, depending on the ideas of the seller, and offerings were not too plentiful even at that figure, which is about $10 per ton higher than a year ago at this time. Reports from eastern Washington indicated that some farmers who have been holding hay for high prices may find that they have "out-smarted" themselves, because hay piles are said to be suffering heavy damage from alternate rain and snow which have piled up on them for the past three months. Thus there may be substantial quantities of hay which will be unusable before the winter is ended.

The proteins were particularly draggy, according to trade sources, and middlemen who specialize in these commodities reported that business is very dull.

Oats were in short supply, and advanced $3@4 ton during the week, while millfeeds also strengthened a bit. On the other hand, there was little or no demand for corn, and the barley market was steady, with ample supplies in sight.

It is too early for chick and poult feeds to affect the market, and the main activity in the trade is in dairy and cattle feeds, plus roughages and grains.

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"When I appeared on Dannen television program with two of my good hatchery customers, I guess just about everybody in the whole county saw the program. Don't think that's not good for business!"

Jim Bowman
Bowman Hatchery
Maysville, Missouri

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Paul Reed
Paul Reed Feed and Produce
Scranton, Kansas

"When I first went into the feed business, I didn't know too much about it. But the Dannen territory man out here has really helped me. He's taught me feed and how to sell it, and he's personally sold a lot of feed for me. The Dannen Resale Program has really worked for me—as far as I'm concerned, it's one of Dannen's outstanding points!"

Lou Albin
Pfister Farm Store
Kearney, Nebraska

HERE'S HOW DANNEN HELPS YOU SELL:

- Concentrated Farm Resale
- Feeder Meetings
- Sales Training School for Dannen Dealers and their employees
- Extensive Newspaper and Farm Paper Advertising
- Strong Radio and TV Coverage
- Local Newspaper Advertising
- Live Displays
- 247-Acre Research Farm
- Dealer Meetings
- Premium Promotions
- Products Control Department
- Hog Finance Program
- Effective Point-of-Sale Material
- Outdoor Signs
- Special Promotion for New Dealers

DEALERSHIPS AVAILABLE

Write today for complete information on Dannen's merchandising and business building plan!

DANNEN

DANNEN MILLS, INC.
St. Joseph, Mo.